PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 13. No. 12, 1949

REPORT OF THE COUNCIL, 1948

The year that has just closed may be regarded as a successful one in the Society's affairs, and the steady development of all the Society's activities has been fully maintained.

The increase in the annual subscription, which became effective this year, has been well received, and it is already very evident that had this step not been taken the Society's financial position would have given cause for anxiety, particularly in view of ever increasing printing costs. In this last connection a second change of printers became inevitable, and at the beginning of July the printing of the Society's publications was transferred to Messrs. Adlard & Son, of Dorking, who are familiar with the printing of scientific journals. Although the change has meant an increase in actual costs, this factor is largely offset by an improvement in other directions, especially a saving of time and labour.

Although little obvious progress has been made with the repairs to the Society's house, in actual fact tenders have been received for the repair and re-decoration of both the exterior and interior. On the advice of the Society's surveyors, Council have so far accepted a tender for work on the exterior only, work to commence in the spring. Consideration of repairs to the interior has been deferred owing to the possibility of the Society's tenants vacating their part of the house in the not too distant future.

The Society was again invited to send representatives to various Congresses of national and international scientific organizations with whose work and aims it is associated.

Sir Guy Marshall and Mr. G. Fox Wilson attended the Eighth International Congress of Entomology in Stockholm on behalf of the Society.

The Hon. Miriam Rothschild acted as the Society's delegate to the Thirteenth International Congress of Zoology held at Paris in July, and she also represented the Society at the Conference of the International Union for the Protection of Nature held at Fontainebleau in October.

The President himself attended the meetings of the Royal Society's Scientific Information Conference, when many proposals for improvement in the publication of scientific information were considered in detail.

At the Conference on Genetics in Stockholm the Society was represented by Dr. E. B. Ford. Nearer home, Dr. A. G. Hamilton, Mr. P. F. Mattingly and Mr. A. J. A. Woodcock acted as the Society's delegates to the meeting of the British Association.

In July the Society's meeting room was lent to the Commonwealth Institute of Entomology on the occasion of the Fifth Commonwealth Entomological Conference. On the evening of 29th July a reception was given by the Society in honour of the delegates to this Conference. Nearly 300 Fellows and guests were present on this occasion.

In the early months of the year the Society's Bye-Laws were amended to allow for the appointment of an Honorary Editor, and Mr. E. B. Britton was nominated to this office. During Mr. Britton's absence in Australia these duties were carried out by Mr. H. Oldroyd.

The Society has maintained its association with the Biological Council and has again been represented at its meetings by Dr. J. W. Evans. Much preliminary work has been done towards establishing the proposed Institute of Biology.

A telegram of congratulation was addressed to His Majesty the King on the occasion of the birth of the infant Prince, and was duly acknowledged by a telegram from His Majesty's Private Secretary.

Early in the year Council gave effect to a proposal for broadening the basis of the Committee for the Protection of British Insects, and the committee now includes representatives of the leading provincial entomological societies. In the spring consideration was given to the War Office claim to an area in the Isle of Purbeck, and as a result Captain Diver represented the Society at the official inquiry. The War Office proved sympathetic to the claims of naturalists for access, but because of their legal responsibility for any accident that might occur, could not accede.

Mr. W. Fassnidge, the Society's representative on the New Forest Association, reported during the year that owing to ill health he was no longer able to serve. Mr. C. W. Mackworth-Praed was appointed in his stead.

The status of *Maculinea arion* in Cornwall has been carefully investigated, and as a result of a visit by Captain Jackson, R.N., the committee hope to organize a measure of control over one area where this butterfly can be nursed. Action has been continued in respect of the protection of *Melitaea cinxia* in the Isle of Wight and *Acidalia immorata* in Sussex. *Aplasta ononaria* has been added to the protected list. The Committee is endeavouring to collect records of attempts to transplant rare and local species. Close touch is being maintained with the national organizations which exist for the preservation of our flora and fauna, so that areas of special entomological interest receive due consideration in post-war planning schemes.

The Society's meetings continue to be well attended, and Council is again grateful to the Meetings Sub-Committee for their advice and assistance in improving their standard and extending their scope. The average attendance was 78 as compared with 75 in 1947.

At the invitation of the Linnean Society a joint meeting was held in their rooms at Burlington House on 9th December, when the subject for discussion was the bearing of the parasite-host relationship on taxonomy.

Much of the detailed business of the Society has, as hitherto, been conducted by the Finance and House Committee under the Chairmanship of Mr. G. Fox Wilson, and the Publication and Library Committee under the Chairmanship of Dr. W. H. Thorpe, for whose help and interest the Society is very grateful.

The use of the library has been maintained and increased during the year, the number of books borrowed being 1,314 (1,287), and the number of Fellows borrowing books being 703 (666); 153 (138) books were lent to the National Central Library. (The numbers in brackets throughout the report indicate the corresponding figures for the previous year.)

Good progress has been made with binding. The arrears of cataloguing of separates are being dealt with, but large accessions by way of gifts and bequests make the overtaking of arrears a difficult task. In this latter connection Council is most indebted to the late C. J. Wainwright for a first selection of the books in his library, and also for a collection of many hundreds of reprints, mostly on Diptera.

The Society's premises are still used as the Publication Office of the International Commission on Zoological Nomenclature.

The loan of the Eltringham Microscope to Mr. W. S. Richards was renewed at the beginning of the year. The instrument has now been returned.

Work continues on the series of *Handbooks on British Insects*, one part being in page proof, and two others in type. These will form a pattern and standard for subsequent issues.

The *Transactions* for 1948 (Volume 99) contain 17 papers, of which 4 deal with Hemiptera, 3 with Lepidoptera, 3 with Diptera, 3 with Orthoptera, 3 with Coleoptera, and 1 with Hymenoptera. The volume consists of 626 pages and 2 plates. Very welcome assistance was again received via the Royal Society from the Government grant in aid of scientific publications, and the Anti-Locust Research Centre kindly contributed £50 towards the cost of Dr. Uvarov's paper; the Society is very grateful for these grants.

The Proceedings were continued in the usual three series as follows:

Series A (*General Entomology*). Volume 23 consists of 114 pages and contains 25 papers, illustrated by 9 plates. The East African Tsetse Research Organisation kindly defrayed the cost of the eight plates illustrating the paper by Dr. C. H. N. Jackson.

Series B (*Taxonomic Entomology*). Volume 17 consists of 158 pages and contains 27 papers illustrated by 2 plates.

Series C (*Journal of Meetings*). A part of Series C was sent to each Fellow in advance of meetings and a complete copy of the volume will be distributed with the last part.

During the year the death of 1 (2) Special Life Fellow—Hugh Main—and 23 (9) Ordinary Fellows has been reported: B. W. Adkin, H. L. Andrewes, G. J. Arrow, P. J. Barraud, T. R. Bell, T. D. A. Cockerell, B. C. Cox, W. E. Cox, A. S. Corbet, A. Dampf, J. C. Eales-White, G. H. Evans, Sir John Fryer, J. A. Lawson, J. W. S. Macfie, J. W. Moore, A. Miles Moss, A. Robinson, J. E. H. Roberts, A. W. Richardson, A. M. Stewart, A. J. Turner, and C. J. Wainwright.

The following 17 (33) Fellows have resigned: C. V. Adams, R. S. D. Balter T. H. Court, B. D. Cumming, A. C. Daintree, V. H. W. Dowson, C. C. Ghosh, P. Haig-Thomas, Mrs. M. W. Kendall, K. H. Chapman, C. L. Patton-Bethune, W. Pickles, J. Richardson, K. Smith, E. H. Sills, H. W. Simmonds and C. J. Swierstra.

The following 6 (2) have been removed in accordance with the Bye-Laws, Chapter XVI, Section 3: N. C. Chatterjee, P. L. F. de Livera, N. Loynes, J. J. Mounsey, J. Prüffer, and C. L. Liu.

During the year 3 Special Life Fellows—Mr. H. Britten, Dr. E. A. Cockayne, and Mr. H. J. Turner—and 90 Ordinary Fellows have been elected, of whom 72 have completed their obligation. In addition, 14 Fellows elected in 1947 completed their obligation in 1948. This has meant an increase of 39 in the number of Fellows, which, in all the circumstances, is most gratifying. The Society now consists of 5 Honorary Fellows, 12 Special Life Fellows, and 843 Ordinary Fellows.

Although these figures are so encouraging, no undue optimism can be felt. Under present conditions Council feel it their duty to keep a close watch on the finances, but at the same time they will do as much as possible to further the aims of the Society and maintain the services to Fellows.

TREASURER'S REPORT

Mr. A. Welti said:

For the seventh year in succession it is my privilege to present the Annual Accounts to the Society.

Owing to the increase in the Subscriptions and relatively large Sales of Publications, it has been a satisfactory year, and the Accounts show a Credit Balance of £141 17*s*. 2*d*. after providing additional sums to our reserves for repairs to the building, for Library Bookbinding and Catalogue, and for our Staff Provident Fund. Donations to Publications amounted to £616, which are gratefully acknowledged. They have been a great help to us in maintaining our work. We also owe thanks to an anonymous friend for a gift of £52 10*s*. to our Library Fund.

The War Damage Commission has now refunded its share of the outlay on preliminary repairs. In the coming year we expect to make further progress in getting our building restored, a tender for all the exterior work having been accepted by Council.

Since the rate of Admission Fees has been reduced from £3 3*s*. to £2 2*s*. it is very satisfactory to note that they were £183 15*s*. this year, as against £187 19*s*. last year, when the rate was £1 1*s*. higher.

The memory of our good friend, the late Hugh Main, will live in the records of our Society. By his will he gave us an immediate bequest of £100, and our Society stands to benefit further later on. A Trust Fund is ultimately to be created, the income from which is to be devoted to furthering the Science of Entomology.

On the Expenditure side, our General Office and House expenses have continued within reasonable bounds. It is quite likely that we may still have to face increases before we can think of effecting reductions. We have in the past year made the same donations to other Societies as has been our practice during recent years.

The expenditure on our Library has increased and efforts will again be made during the coming year to catch up with arrears of binding. A cursory examination of the shelves in our library will show how much has been achieved during the last two years in spite of the fact that binding is a very expensive item these days.

The most serious expenditure is the cost of Publications. However, our prime object is to diffuse entomological knowledge, and we must continue to do our best, even at a sacrifice. It is imperative that our reputation in this respect is maintained.

A good deal of preliminary work has been going on in regard to the Handbooks. It may be expected that the first Manuals will appear in the New Year.

The preparation of a Library Catalogue, to which frequent reference has been made, is the subject of much anxious thought. During the year the accessions by way of Separates were almost beyond the Society's capacity. Little time has been available for attending to the large collection accumulated in the past. This year the most notable gift was the entire collection of Separates in the Library of the late C. J. Wainwright, as well as the first selection of his books. It seems now that it may be more expedient first to issue a catalogue of our Books and Periodicals and afterwards to deal with the reprints as a separate entity.

An adequate Credit Balance at our Bankers has enabled us to discharge all our debts promptly throughout the year and the Society can look with confidence to the future.

This has been a general outline of the financial position and the Society's warm thanks are due to the Finance Committee under the able Chairmanship of Mr. Fox-Wilson. It should also be appreciated that our President has attended nearly every meeting of the Finance Committee and all have been animated by one desire to further the welfare of our Society.

May I thank our permanent staff for all the assistance they have given me, and all the kindness shown during the past twelve months.

The Accounts are now laid on the table and you are invited to study them at your leisure. They have again been audited by Messrs. W. B. Keen & Co., who have given the greatest care and attention to every detail.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

STATEMENT OF INCOME AND EXPENDITURE for the Year ended 31st December, 1948.

(Presented at the Annual Meeting, 19th January, 1949)

GENERAL FUND.

INCOME.

1947. £	1947. £		£ s. d.	£ s. d.
		To Subscriptions—		
	89	Received in advance for 1948	116 3 2	
	1,504	Received in 1948 for 1948	2,372 13 7	
	64	Received in 1948 for previous years ..	89 5 0	
	1,657		2,578 1 9	
	50	*Less* Subscriptions in arrear at 31st December, 1947, valued at	50 0 0	
	1,607		2,528 1 9	
	50	*Add* Subscriptions in arrear at 31st December, 1948, valued at	75 0 0	
1,657				2,603 1 9
282		,, Transfer from Capital Reserve Fund—Dividends and Interest on Investments (gross)		462 14 9
		,, Publications—		
	2,051	Sales	2,807 17 8	
	325	Transfer from Library Fund—Value of Exchanges	325 0 0	
2,376				3,132 17 8
		,, Sub-Tenants—		
	286	Rent	262 0 0	
	324	Contributions to House Expenses ..	343 5 3	
610				605 5 3
10		,, Interest on Deposit		—
51		,, Interest—Post Office Savings Bank ..		47 18 4
	—	,, Bequest by the late Hugh Main, Esq.		100 0 0
136		,, Excess of Expenditure over Income carried to Balance Sheet		—
£5,122				£6,951 17 9

EXPENDITURE.

1947. £	1947. £			£ s. d.	£ s. d.
		By House Expenses—			
	334	Wages		373 0 8	
	143	Fuel, Gas and Electric Light ..		124 7 5	
	39	Insurance		36 12 2	
	24	Water		26 8 0	
	300	Repairs Fund—Transfer		750 0 0	
	70	Miscellaneous		65 5 2	
910					1,375 13 5
		,, Office—			
	864	Salaries		1,016 10 5	
	118	Printing and Stationery		143 16 5	
	100	Postage and Telephone		106 13 8	
	32	Audit Fee		31 10 0	
	10	Superannuation		10 0 0	
	73	Miscellaneous		108 12 10	
1,197					1,417 3 4
		,, Library Fund—			
	335	Transfer		493 19 1	
	—	do. towards arrears of Binding ..		200 0 0	
	325	do. value of Exchanges		325 0 0	
660					1,018 19 1
	2,742	,, Publications		2,869 9 2	
	451	*Less* Grants	380 3 6		
	—	Westwood Bequest ..	14 7 4		
				394 10 10	
	2,291			2,474 18 4	
		,, Transfer to Special Publications Fund for Library Catalogue		200 0 0	
2,291					2,674 18 4
		,, Expenses of Conversazione—Commonwealth Entomological Conference ..			215 3 5
		,, Donations—			
	25	*Zoological Record*		25 0 0	
	25	International Trust for Zoological Nomenclature		25 0 0	
	5	Wicken Fen Fund		5 0 0	
	5	Biological Council		—	
	3	Committee for the Protection of British Insects		3 3 0	
	1	Scarborough Field Naturalists' Society		—	
64					58 3 0
—		,, Transfer to Capital Reserve Fund for Staff Provident Purposes			50 0 0
—		,, Excess of Income over Expenditure carried to Balance Sheet			141 17 2
£5,122					£6,951 17 9

STATEMENT OF INCOME AND EXPENDITURE for the year ended 31st December, 1948.

LIBRARY FUND.

INCOME.

1947. £	£		£ s. d.	£ s. d.
		To Interest on Investments—		
32		Hamilton Druce Bequest Fund		32 10 0
		Donation—An Anonymous donor		52 10 0
		,, General Fund—		
	335	Transfer	493 19 1	
		do. towards arrears of Binding	200 0 0	
	325	do. Value of Exchanges	325 0 0	
660				1,018 19 1
£692				£1,103 19 1

EXPENDITURE.

1947. £	£		£ s. d.	£ s. d.
	81	By New Books	124 2 10	
	230	Binding, Repairs and Insurance	369 16 3	
	24	Furniture	—	
335				493 19 1
325		,, Transfer to Sales of Publications—Value of Exchanges		325 0 0
32		,, Excess of Income over Expenditure carried to Balance Sheet		285 0 0
£692				£1,103 19 1

REPAIRS TO PREMISES FUND.

INCOME.

1947. £		£ s. d.
300	To General Funds—Transfer	750 0 0
—	,, War Damage Compensation	222 19 0
£300		£972 19 0

EXPENDITURE.

1947.		£ s. d.
284	By Repairs	6 3 6
16	,, Excess of Income over Expenditure carried to Balance Sheet	966 15 6
£300		£972 19 0

SPECIAL PUBLICATIONS FUND.

INCOME.

1947. £		£ s. d.
—	To Transfer from General Fund towards Library Catalogue	200 0 0
32	,, Sales of *Generic Names of British Insects* and *Hubner*	20 8 3
44	,, Excess of Expenditure over Income carried to Balance Sheet	—
£76		£220 8 3

EXPENDITURE.

1947. £		£ s. d.
76	By Expenditure on account of *Generic Names of British Insects* Part IX	—
—	,, Excess of Income over Expenditure carried to Balance Sheet	220 8 3
£76		£220 8 3

HANDBOOKS OF BRITISH INSECTS.

INCOME.

1947. £		£ s. d.
600	To Grant per the Royal Society	—
—	,, Excess of Expenditure over Income carried to Balance Sheet	6 19 6
£600		£6 19 6

EXPENDITURE.

1947. £		£ s. d.
15	By Expenditure—Preparing Illustrations	6 19 6
585	,, Excess of Income over Expenditure carried to Balance Sheet	—
£600		£6 19 6

BALANCE SHEET, 31st December, 1948.

GENERAL FUND.

	£	s.	d.	£	s.	d.
Sundry Creditors				887	3	3
Estimated Liability in respect of balance of Publications for Year				225	0	0
Subscriptions in Advance				101	2	4
Donation towards Publications unspent				200	0	0
WESTWOOD BEQUEST						
As at 31st December, 1947	7	3	8			
Add Interest on Investment during year	7	3	8			
	14	7	4			
Less Amount applied towards cost of Illustrations ..	14	7	4		—	
EXCESS OF ASSETS OVER LIABILITIES—						
As at 31st December, 1947	119	0	5			
Add Excess of Income over Expenditure for Year to date	141	17	2			
				260	17	7
				£1,674	3	2

	£	s.	d.	£	s.	d.
Sundry Debtors—						
Subscriptions valued at	75	0	0			
Publications valued at	800	0	0			
Rent and Contributions to House Expenses	153	17	6			
				1,028	17	6
Insurance Premiums prepaid				122	10	0
Balance at Bank—						
Current Account	414	17	3			
Petty Cash Account	95	7	10			
				510	5	1
Cash in Hand				12	10	7
(In addition to the above, the Society holds a sum of £177 0*s*. 9*d*. on behalf of the Permanent Committee of the International Congress of Entomology.)						
				£1,674	3	2

RECONCILIATION OF CASH BALANCES—

	£	s.	d.	£	s.	d.
Post Office Savings Bank—						
Library Fund	202	0	11			
Repairs to Premises Fund	500	0	0			
Special Publications Fund..	250	0	0			
Capital Reserve Fund	29	14	10			
Hamilton Druce Bequest Fund	66	19	6			
				1,048	15	3
Current Account—						
General Fund	414	17	3			
Library Fund	188	4	1			
Repairs to Premises Fund	143	9	0			
Special Publications Fund..	157	15	2			
Handbook of British Insects	37	19	3			
				£942	4	9
Petty Cash Account—						
General Fund				£95	7	10
Cash in Hand—						
General Fund				£12	10	7

BALANCE SHEET, 31st December, 1948.

LIBRARY FUND.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Excess of Assets over Liabilities—			Library Furniture and Fittings		Not valued
As at 31st December, 1947	858 6 3		Library Books (valued at £15,000)		—
Add Excess of Income over Expenditure for year to date	285 0 0	1,143 6 3	Investments at cost—		
			£200 3% Savings Bonds 1955/65	200 0 0	
			£539 12*s*. 9*d*. 3% Funding Loan 1959/69	500 11 3	
			(*Market Value at date* £770.)		700 11 3
			Insurance Premiums prepaid		52 10 0
			Balance at Bank—		
			Post Office Savings Bank	202 0 11	
			Current Account	188 4 1	390 5 0
		£1,143 6 3			£1,143 6 3

REPAIRS TO PREMISES FUND.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Excess of Assets over Liabilities—			Investments at Cost—		
As at 31st December, 1947	1,528 4 5		£750 3% War Stock 1955/59	754 6 8	
Add Excess of Income over Expenditure for Year to date	966 15 6	2,494 19 11	£627 10*s*. British Transport 3% Stock 1978/88	596 13 0	
			£539 12*s*. 8*d*. 3% Funding Loan 1959/69	500 11 3	
			(*Market Value at date* £1,986.)		1,851 10 11
			Balance at Bank—		
			Post Office Savings Bank	500 0 0	
			Current Account	143 9 0	643 9 0
		£2,494 19 11			£2,494 19 11

SPECIAL PUBLICATIONS FUND.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Excess of Assets over Liabilities—			Investments at Cost—		
As at 31st December, 1947	1,548 18 4		£250 3% War Stock 1955/59	251 8 10	
Add Excess of Income over Expenditure for Year to date	220 8 3	1,769 6 7	£1,165 British Transport 3% Stock 1978/88	1,108 3 3	
			(*Market Value at date* £1,435.)		1,359 12 1
			Sundry Debtors for Publications		1 19 4
(Included in the above is a sum of £1,100 allocated to the Library Catalogue.)			Balance at Bank—		
			Post Office Savings Bank	250 0 0	
			Current Account	157 15 2	407 15 2
		£1,769 6 7			£1,769 6 7

HANDBOOKS BRITISH INSECTS.

	£ s. d.	£ s. d.		£ s. d.
Excess of Assets over Liabilities—			Investment at Cost—	
As at 31st December, 1947	584 14 0		£585 British Transport 3% Stock 1978/88	539 15 3
Less Excess of Expenditure over Income for Year to date	6 19 6	577 14 6	(*Market Value at date* £587.)	
			Balance at Bank—Current Account	37 19 3
		£577 14 6		£577 14 6

BALANCE SHEET, 31st December, 1948.

CAPITAL RESERVE FUND.

	£ s. d.	£ s. d.
EXCESS OF ASSETS OVER LIABILITIES—		
As at 31st December, 1947		7,190 14 11
Add Admission Fees received during Year . ..		183 15 0
Interest on Investments		462 14 9
		7,837 4 8
Less Loss on Redemption of 3% Conversion Stock ..	57 12 3	
Transfer to General Fund Income and Expenditure Account	462 14 9	520 7 0
		7,316 17 8
Staff Provident Fund—		
As at 31st December, 1947	458 2 11	
Add Transfer from General Fund Income and Expenditure Account	50 0 0	508 2 11
		£7,825 0 7

	£ s. d.	£ s. d.
Freehold Premises, 41, Queens Gate, S.W.		Not valued
(Cost including Alterations, £13,417.)		
Investments—		
At Value 6th March, 1934—		
£532 3*s.* 5*d.* 4% Consols	591 7 6	
At Cost—		
£3,500 3% Redemption Stock 1986/96	3,334 0 3	
£600 3½% War Stock	609 2 0	
£4,000 2½% Consols	3,260 16 0	
(*Market value at date* £7,921.)		7,795 5 9
Balance at Bank—Post Office Savings Bank		29 14 10
		£7,825 0 7

TRUST FUNDS.

	£ s. d.
HAMILTON DRUCE BEQUEST FUND—	
As at 31st December, 1947	1,095 15 6
WESTWOOD BEQUEST FUND—	
As at 31st December, 1947	250 0 0
	£1,345 15 6

	£ s. d.	£ s. d.
HAMILTON DRUCE BEQUEST—		
Investments		
£406 2*s.* 2*d.* Mersey Docks and Harbour Board 3½% Debenture Stock 1970/80 at cost	418 11 6	
£593 17*s.* 10*d.* ditto transferred from Capital Reserve Fund in 1946 at Market Value	610 4 6	
(*Market value at date* £1,030.)		
	1,028 16 0	
Balance at Bank—Post Office Savings Bank	66 19 6	1,095 15 6
WESTWOOD BEQUEST—		
Investment at cost—		
£239 12*s.* 4*d.* Birmingham Corporation 3% Stock, 1947		250 0 0
(*Market value at date* £226.)		
		£1,345 15 6

(*Sgd.*) ARTHUR WELTI, *Hon. Treasurer.*

We have examined the foregoing Balance Sheets and Accounts with the Books and Vouchers of the Society, and certify same to be in accordance therewith. We have verified the Investments and Bank Balances and the Solicitors have certified to us that they held the Deeds of No. 41 Queens Gate for safe custody on behalf of the Society.

Finsbury Circus House,
Blomfield Street,
London, E.C.2.
12th January, 1949.

(*Sgd.*) W. B. KEEN & Co.,
Chartered Accountants.

COMMITTEE FOR THE PROTECTION OF BRITISH INSECTS.

RECEIPTS AND PAYMENTS ACCOUNT for the year ended 31st December, 1948.

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
To Balance at Bank 1st January, 1948	8	12	10	By Expenditure on Preservation of *L. dispar*	9	0	0
Donations	12	11	0	Balance at Bank 31st December, 1948	12	3	10
	£21	3	10		£21	3	10

(*Sgd.*) H. M. EDELSTEN, *Hon. Treasurer.*

We have audited the above Account of Receipts and Payments and certify it to be correct.

Finsbury Circus House,
Blomfield Street,
London, E.C.2.
12th January, 1949.

(*Sgd.*) W. B. KEEN & CO., *Chartered Accountants.*

WICKEN FEN FUND.

RECEIPTS AND PAYMENTS ACCOUNT for the year ended 31st December, 1948.

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
To Balance at Bank 1st January, 1948	2	11	6	By Printing, Stationery and Postage	5	1	3
Donations	87	11	6	Donation to the National Trust	82	10	3
				Balance at Bank 31st December, 1948	2	11	6
	£90	3	0		£90	3	0

(*Sgd.*) H. M. EDELSTEN, *Hon. Treasurer.*

We have audited the above Account of Receipts and Payments and certify it to be correct.

Finsbury Circus House,
Blomfield Street,
London, E.C.2.
12th January, 1949.

(*Sgd.*) W. B. KEEN & CO., *Chartered Accountants.*

THE PRESIDENT'S ADDRESS

Preliminary Remarks

On the occasion of the Annual Meeting your President has three traditional duties—first, to comment on the affairs of the Society during the past year; secondly—and a sad duty—to review the losses, by death, that the Society has suffered; and thirdly to address the members on some scientific subject of wide general interest and also of personal interest to himself.

The first of my duties is light. As you have just seen from the Reports of the Treasurer and the Council, our affairs have prospered. When, nearly two years ago, we reluctantly decided we must raise our subscription, we were not sure what the effect would be. To-day we find that the result has been a number of new members greater than in the previous year, and that the increase of income has been largely used up in increasing costs of printing, and in allotting much-needed extra funds to meet the large expenditure on repairs to our premises, which has to be incurred in the immediate future. Without this extra income our position would have been very difficult.

The increase in new members over last year is particularly pleasing, as it shows that the exceptional number of over 100 in 1946 was not merely a post-war rush, such as occurred after the first world war. In 1947 there were about 70 new members, but in this past year the number has risen again to 90.

Another great cause for self congratulation by the Society is, I think, that all our regular publications, both *Transactions* and the two series of *Proceedings*, have appeared before the end of the year in spite of editorial changes and great printing difficulties.

My next duty is a particularly heavy one, as no fewer than 28 present and past Fellows of the Society have died during the year—including many who have served as officers or as members of the Council. Many also were personal friends of mine, so that I have a double regret at their loss. The following notes include very brief facts about most of these Fellows. In one or two cases we have been unable to obtain any particulars at the time of writing.

Mr. B. W. ADKIN, died on the 22nd August, 1948, aged 83. He had been a Fellow of the Society since 1902. He was interested in British Lepidoptera and specialized particularly in the Bombyces and the LASIOCAMPIDAE. He collected in many remote parts of Britain, including the Scilly Islands, and had a large collection of British Lepidoptera.

Mr. H. L. ANDREWS, who died in 1946, had been a Fellow since 1922. He was particularly interested in Lepidoptera and Aculeate Hymenoptera. His collections have been presented to the Dorchester County Museum.

Mr. G. J. ARROW died on 5th October, 1948, aged 74. He had been a Fellow of our Society since 1899 and served on the Council from 1905–1907. He entered the British Museum (Natural History) in 1896, where he studied the Coleoptera and became a world specialist in the Lamellicornia. He published more than 100 papers on entomology, including four volumes of the *Fauna of India*.

Mr. P. J. BARRAUD had been a Fellow since 1902. He worked for many years in India as a Medical Entomologist, and published a number of papers on the CULICIDAE, including the volume on that family in the *Fauna of India*.

Mr. T. R. BELL died on 24th June, 1948, aged over 80. He had been a Fellow since 1936. He went out to India in 1884 and spent the greater part of his life there in the Forestry Service. He was specially interested in Lepidoptera, and within this order in the SPHINGIDAE. He also made collections of Indian Coleoptera and Hymenoptera. In 1930 he deposited all his entomological collections in the Natural History Museum, and later presented them to the Museum.

Prof. T. D. A. COCKERELL, who died on 26th January, 1948, at the age of 87, had been a Fellow of our Society since 1917. He was born in England but, owing to ill-health, went to Colorado, U.S.A., at the age of 21, and, except for short visits, did not return. Later he obtained a position in Jamaica, but returned to Colorado, where he spent altogether 44 years. In Jamaica he worked chiefly on the COCCIDAE, but his main interest, and most of his very large number of publications, were on the Hymenoptera. He was a voluminous writer with wide interests, and a great traveller. In 1946 he made a gift of £200 to our Society.

Dr. A. STEVEN CORBET, who died on the 16th May at the early age of 51, had been a Fellow since 1933, had served on the Council 1941–43, and was a Vice-President in 1942. He started as a biochemist, and had a varied career, including bacteriology at Cambridge and at the Rubber Research Institute in Kuala Lumpur, Malaya. His main entomological interest was in the butterflies of the world. In 1939 he joined the staff of the Natural History Museum, and worked on the classification of butterflies in relation to geographical distribution, and particularly the problem of island races.

Mr. B. C. COX, had been a Fellow since 1931.

Mr. W. E. COX, who was 79 when he died in 1948, had been a Fellow since 1933. By profession he was in the Great Western Railway Engineering Department. He had been interested for many years in the Lepidoptera, and on moving to Cardiff in 1929 he became specially interested in the " Micros," of which he added over 60 species to the Glamorganshire list.

Dr. A. DAMPF, who died on 17th March, 1948, aged 64, had been a Fellow since 1928. His early life was spent in Konigsberg, and in 1913 he went as entomologist to German East Africa. In 1923 he went to Mexico, where he spent the rest of his life. He became Chief Entomologist to the Department of Agriculture and also a Professor of Entomology, and made very large collections of Mexican insects. He worked on all branches of entomology but was specially interested in Locusts, and in blood-sucking insects, especially *Simulium* and *Phlebotomus*.

Major J. C. EALES-WHITE, had been a Fellow since 1910. He was a general naturalist with an interest in entomology.

Colonel G. H. EVANS, had been a Fellow since 1926.

Sir JOHN C. F. FRYER, F.R.S., who died on 22nd November, 1948, aged 63, had been a Fellow since 1907, President from 1938–9, Vice-President in 1927, 1937 and 1940, and on the Council for many years. He was born in Norfolk and had a great love for the Fenlands, and particularly for their Natural History. After graduating at Cambridge he visited Ceylon and Aldabra Island in the Indian Ocean, where he carried out entomological and genetical investigations. In 1920 he was appointed to the Ministry of Agriculture Plant Pathological Laboratory in Harpenden, and remained in charge of this until 1943, when he became Secretary to the Agricultural Research Council. He was made a K.B.E. in 1946 and elected to the Royal Society in March, 1948. He will be best known to the Fellows of our Society for his great practical interest in the preservation of the Fenlands and their rare insect inhabitants. His collections of Lepidoptera, Coleoptera and Heteroptera have been deposited in the Entomology Department at Rothamsted Experimental Station, Harpenden.

Lt.Colonel WILLIAM C. B. HAWLEY, D.S.O., who died on 21st December, 1948, joined our Society in 1946. He was interested in the British Lepidoptera.

Mr. J. A. Lawson, who was particularly interested in Bee Keeping, had been a Fellow since 1930.

Dr. J. W. S. Macfie, who died on 11th October, 1948, aged 69, had been a Fellow since 1936. His work was chiefly on Tropical Medicine in West Africa. On the entomological side he studied mosquitoes, ceratopogonid midges, and tsetse flies. After retirement from Africa in 1923 he joined the Liverpool School of Tropical Medicine. During the second world war he worked with a Field Malaria Laboratory in the Near East.

Mr. Hugh Main, who died on 1st March, 1948, at the age of 80, had been a Fellow since 1899, Vice-President in 1941, and was elected a Special Life Fellow in 1945. By profession he was a sugar chemist. He was keenly interested in entomology, especially in the life histories of obscure groups. He was a first-class insect photographer and was ingenious in devising apparatus for the breeding of insects, including those that feed underground. When he died he bequeathed to the Entomological Society £100, and also a reversionary interest in a much larger portion of his estate.

Mr. J. W. Moore, had been a Fellow since 1922. He was specially interested in Lepidoptera, both British and tropical. His collection of tropical Lepidoptera was bequeathed to the Birmingham Natural History Museum and his British Collection to the Birmingham Natural History Society.

The Rev. A. Miles Moss, who died on the 7th January, 1948, had been a Fellow since 1911. I gave a brief account of his work in my Presidential remarks last year.

Mr. A. W. Richardson, who died on 6th August, 1948, aged 75, had been a Fellow since 1920. He was a man of wide interests and a remarkable linguist, speaking fluently about ten languages. His interest in entomology included the Lepidoptera, Hymenoptera and Diptera, particularly of the European countries.

Dr. J. E. H. Roberts, died on 25th August, 1948, aged 67. He had been a Fellow from 1927–37 and again from 1942. By profession he was a surgeon. One of his chief hobbies was the study of dragonflies, especially their ecology and biology, and the breeding of the nymphs. He succeeded in breeding *Gomphus vulgatissimus* in London from nymphs obtained in the New Forest.

Mr. A. Robinson, who died on 9th April, 1948, aged 83, was a Fellow from 1889–1898 and then again from 1925. His main interest in entomology was in the Macro-Lepidoptera, especially those inhabiting the fenlands, and for many years he was on the Committee for the Preservation of Wicken Fen. His collection has been given to the Liverpool Museum.

Mr A. M. Stewart, who died in July, 1948, aged 86, had been a Fellow since 1923. He spent most of his life in Paisley, Scotland, where he was by profession a shawl-designer. He was widely interested in Natural History and wrote two small books on British Butterflies and British Moths.

Dr. Alfred J. Turner, who died on 29th December, 1947, at the age of 86, had been a Fellow since 1898. He trained as a Doctor in London, but went out to Australia at the age of 28 and became there a pioneer in Public Health and Children's Medicine. In entomology he started with butterflies, but later extended his interest to moths. He published about 100 papers describing many hundreds of new Lepidoptera. His collection is now in the Museum of the Division of Economic Entomology at Canberra.

Mr. C. J. Wainwright, died on 6th October, 1948, at the age of 82. He had been a Fellow since 1897, and had served twice on the Council. He started as a lepidopterist but became more and more interested in Diptera, and finally was one of the authorities on this group. He specialized for many years on the TACHINIDAE, and published a revision of the family, and two supplements, in our *Transactions*. He was one of the founders of the Birmingham Natural

History Society in 1889. He bequeathed his collections to the Natural History Museum, and a number of books and reprints to our own Library.

In addition to the above, three well-known entomologists have also died who were at one time Fellows of our Society, but had resigned.

Mr. M. E. Mosely, who died on 30th August, 1948, at the age of 71, had been a Fellow from 1910–1947. Owing to an early interest in fishing he took up the study of the Trichoptera, and later the Ephemeroptera and Plecoptera. At first this was a spare time study, but on retirement in 1929 he came to work at the Natural History Museum, and built up a fine collection of Trichoptera. He published many papers including the *British Caddis Flies* in 1939.

Mr. O. H. Latter died on 11th October, 1948, aged 84. He had been a Fellow from 1895–1939. By profession he was a science master at Charterhouse for 36 years. He was specially interested in Lepidoptera, Diptera and Hymenoptera. He had a gift of exposition in writing and teaching, and was a great believer in the value of biology as a part of general education.

Mr. W. H. Edwards, who was a Fellow from 1910–1925, was interested particularly in the Lepidoptera of the Birmingham district, and was the first Curator at the Birmingham City Natural History Museum.

(The President asked those present to stand for a few moments in memory of the Fellows who had died during the year. He then delivered that portion of his address entitled " The Migration of Lepidoptera, and the problem of Orientation," which will be found overleaf).

MIGRATION IN LEPIDOPTERA AND THE PROBLEM OF ORIENTATION.

By C. B. Williams, Sc.D.

(Rothamsted Experimental Station, Harpenden).

Presidential Address to the Fellows of the Royal Entomological Society of London, delivered to the Annual Meeting on Wednesday, 19*th January,* 1949.

During a visit to British Guiana in 1916—now over thirty years ago—I saw for the first time a directional movement of butterflies; hundreds of *Catopsilia statira* were flying steadily to the south-east for about ten days over the low-lying forest country where I was then living. An account of this flight was published in our *Transactions* for 1917.

In the following years I was fortunate to see several similar movements—some on a larger and some on a smaller scale—in other parts of Central and South America, in Egypt and East Africa, and even here at home in England; and as a result the study of Insect Migration has become one of my main interests in the field of entomology.

Insects of many different orders are known to migrate, but the great mass of evidence relates to the Orthoptera (especially the Acridiidae) and to the Lepidoptera; and, as the locust problems are well cared for by our Anti-Locust Research Centre under Dr. Uvarov, I have confined most of my work to the Lepidoptera.

Within this order migration is found in both butterflies and moths, but as the former are active by day their movements are frequently seen, while the night-flying moths are scarcely ever observed in continuous flight. Our greater knowledge of the movements of butterflies must not therefore be taken as an indication that migration is more common in these than in the Heterocera.

Evidence of the migration of insects comes in several ways. First, and most convincing, are observations by naturalists of continued flight in one direction. Secondly, there is the sudden appearance in numbers of certain species with no apparent evidence of their previous residence in the locality. Thirdly, the sudden disappearance of large numbers with no evidence of death. Fourthly, the appearance of winged insects, sometimes in numbers, far out at sea. And fifthly, the failure to discover certain species in any stage during a portion of the year in localities where they regularly occur at other seasons. Indirect evidence may come from the fact that migrant species usually have a wide range of distribution within which local races do not develop. It will be obvious that all types of evidence except the first are subject to possible alternative explanations.

Allowing as far as possible for all such errors, I have become convinced of the existence in many species of Lepidoptera of migration over large distances as a regularly recurring phenomenon. And by "migration" I mean a change of location which is determined both in distance and direction by the insect itself, and not a passive distribution of individuals by overpowering forces such as strong winds.

We have evidence to-day of migration in two or three hundred species of butterflies, from almost all parts of the world. In about fifty of these there is a considerable weight of evidence which makes it almost impossible to accept any other explanation. In view of the fact that in most parts of the world the habits of butterflies are unstudied, this is quite a considerable total, but it becomes more impressive when we consider smaller and better known areas. Thus, out of the 68 species of butterflies which have been found in Britain, migration is known to occur in 17 (one quarter of the total), and at least 11 species are entirely dependent on immigration for their continued occurrence in our Islands.

In Ceylon, where directional flights are of comparatively frequent occurrence, out of a total of just under 250 known species, nearly 70 have been recorded as taking part in these flights, and about 25 species are regularly observed.

In some of the migrations that have been observed the numbers of individuals almost defy calculation. Kirkpatrick estimated that in a flight in East Africa in 1926 about 36 million white butterflies (*Belenois aurota* (*mesentina*)) were crossing each mile front per day. McGregor calculated that during a flight of Painted Lady butterflies in California in 1924, about three thousand million butterflies crossed the 40 mile front over which it was known to extend.

We have also evidence, some of which will be given later, that these movements frequently continue over distances of up to and perhaps over a thousand miles.

So that migration in the Lepidoptera is not an exceptionally rare phenomenon, found in very few individuals and very few species, but one which affects hundreds of species and countless millions of individuals every year, and the habit may carry these individuals over great distances, sometimes from one continent to another.

To give an idea of what is known of the movements of particular species let us take three examples ; the Monarch or Milkweed butterfly (*Danaus plexippus*), the Painted Lady (*Vanessa cardui*) and the Large Cabbage-White butterfly (*Pieris brassicae*).

Three races of the " Monarch " are found in the American continent. One (*plexippus*) occurs in North and Central America and in some of the northerly islands of the Gulf of Mexico ; a second (*nigrippus*) in the rest of the West Indian Islands, in Southern Central America, and in South America, north and west of the Amazon ; and the third (*erippus*) in Brazil south of the Amazon, in Uruguay, Argentine, Chile, and possibly in Southern Peru.

The North American race is found in summer throughout the United States and southern Canada as far as the shores of Hudson Bay in the east, and further north, occasionally reaching Alaska, in the west. At the beginning of autumn—at the end of August or early in September—the butterflies in the north begin to move southwards and to congregate together. At first they form small bands of a dozen or less, but as they move south the groups aggregate so that finally there may be thousands of butterflies in a single flight. These autumn flights are frequently seen in the Eastern and Mid-West States and along the West Coast, but there are scarcely any records for the large mountainous area of the Rockies that separates the West Coast from the Mississippi Valley.

The butterflies move steadily southwards until, about the beginning of October, they begin to reach Florida in the east and Southern California in the west. Here they settle down on groups of evergreen trees, usually close to the sea, and spend the greater portion of the winter in a state of semi-hibernation, occasionally flying round in bright sunshine, but more usually hanging dormant on the trees. The same trees may be visited year after year, and the butterflies may be in such numbers as to appear as chestnut-brown patches against the dark green of the foliage.

When spring arrives, the butterflies become more active and the bands gradually break up ; pairing is seen and both sexes gradually work their way to the north, the female laying eggs on the Milkweed (*Asclepias*) which is just appearing above the ground. They start their journey about the end of March and reach southern Canada early in June. In this spring migration the butterflies normally fly individually and not in mass, and so they are much less conspicuous than in the autumn.

From eggs laid in the south early on this journey there may be three generations before the autumn movement; in the northern states perhaps two generations; and in Southern Canada there is only time for a single generation before the return flight to the south commences. Thus we see that the same individual butterflies which fly south return to the north in the spring, but it is their children, grandchildren or great grandchildren (according to latitude) which makes up the new flight in the autumn.

The total distance covered may reach 1,000 to 1,500 miles in each direction, giving a double flight for one individual of two or three thousand miles.

The form of *D. plexippus* found in the West Indies and northern South America has not been recorded as migratory. The Southern form appears to have similar movements to those in North America, flying towards the equator in the autumn and away from it in the spring, but the information is at present very scanty.

The northern race of the Monarch has spread, within historic times, very widely westward across the Pacific to most of the smaller islands, to New Zealand and Australia, and to the coast of China. In the east it has crossed the Atlantic to the Azores and Madeira Islands, where it is now established. In the continent of Europe its food-plant is unknown, but over 160 individuals have been captured or seen in the British Isles in the past 80 years. How these have reached our shores is an interesting problem for entomologists to settle in the future.

The Painted Lady butterfly (*Vanessa cardui*) is found in almost every part of the world from the equator to the cold temperate areas, and in all continents except South America, where it has only been recorded as a great rarity.

In the Europe, North Africa, W. Asia area it breeds during the winter along the edges of the great desert belt that stretches across Northern Africa into South-Western Asia. In the spring of the northern hemisphere numbers, varying greatly from year to year, fly northwards from the breeding areas into the Mediterranean coastlands of North Africa; cross the Mediterranean itself without difficulty; and work their way northwards through Europe. They usually pass through North Africa about April, and reach the latitude of south England early in June. They may continue still further north and stragglers in some years reach Iceland and, further east on the continent of Europe, almost to the Arctic Circle.

In southern Europe and up to about latitude 60° (north of Scotland) they breed during the summer. In south England home-bred Painted Ladies appear during August and may remain flying round until late autumn. There is practically no evidence that any survive the winter in the British Isles except in the extreme south-west of Ireland, where temperature conditions in the winter are almost Mediterranean.

There is some evidence of a return flight to the south in the autumn. I recorded recently in our Proceedings a flight which I saw in September, 1943, at sea off the north-west coast of Africa, and which appeared to be heading towards the south.

In North America *V. cardui* is found as an irregular immigrant. It appears in some summers in great numbers over most of the U.S.A. and southern Canada, and as far to the north-east as Newfoundland; while in other years scarcely any are seen. The only evidence of movement into the U.S.A. in the spring is into Southern California, Arizona and New Mexico from Western Mexico, which latter area has an arid climate not unlike that of North Africa. There is no evidence of immigration into or from Florida, and indeed, there is no suitable climate or known area of breeding anywhere to the south of U.S.A., except in the extreme west. There is also no evidence of survival of the butterflies in any stage during the winter over the greater portion of the U.S.A.

If these conclusions are correct we are left with the surprising possibility that the butterflies which appear sometimes in numbers in Newfoundland must have come from Western Mexico—a distance of about 3,000 miles ; although it is possible that this might be done in two generations. There is in North America no evidence of a return flight to the south in the autumn ; but against this must be set the fact that no one has ever looked with any assiduity for any such evidence.

At the other end of the range of *V. cardui* in Australasia, where the variety *kershawi* replaces the type, there is some evidence that the butterflies may cross the sea from Australia to New Zealand—a distance of about 1,300 miles.

Painted Ladies are also frequently seen far out at sea. Matthew, in 1865, saw two butterflies flying round his ship which was in mid North Atlantic about 500 miles east of Newfoundland and 1,000 miles due west to the south of Ireland (from which continent they had come ?). I have in my own collection a specimen which was one of a number seen in mid South Atlantic about 800 miles west of St. Helena, 1,100 miles from the Brazilian coast, and 1,400 miles from the nearest coast of Africa (Sierra Leone).

The third species that I will review briefly is the Large Cabbage-White butterfly (*Pieris brassicae*), which is of special interest to us here as it is one of the few species that is likely to be seen in mass flight in Great Britain, and also because its direction and season of flight do not appear to fit in with the general rule for temperate climate insects. In Europe it appears to breed in large numbers during the early summer in Southern Scandinavia or in the Islands in the Baltic, and towards the end of July or early August it makes mass flights to the south, chiefly through central Germany, Austria and occasionally into Switzerland. These flights are sometimes so thick as to be described as " snowstorms." Offshoots of the main movement seem to come in a south-westerly or westerly direction, across Holland, Belgium and the North Sea, and reach our shores chiefly in Norfolk, Suffolk and Essex, but occasionally farther north. Also at times they come in across the Channel to Kent and Sussex in a north-westerly direction.

The numbers arriving at our shores may sometimes reach millions, and, in view of the very high parasitism of *P. brassicae* in this country, it has been suggested that this usually abundant butterfly might die out from our fauna if it were not for the reinforcement of the population by these immigrations.

A few smaller flights have been recorded at the end of May, particularly in England (where, however, much more close observation has been made), and a very few in September, but the July–August period is undoubtedly the main movement. There is at present no evidence of a return flight to the north at any time in Central Europe.

The same species migrates in the north of India, where it moves to the hills at the beginning of the hot season and returns to the plains at the beginning of the cooler weather.

* * *

After this brief survey of the known behaviour of some typical species I would like to discuss certain problems connected with migration, and particularly that of orientation.

During a migratory flight the path of each butterfly—which would normally have been here and there, backwards and forwards, leaving the insect at the end of the day more or less where it started—is straightened out so that the insect flies steadily in one direction. This " compass " direction can be kept up hour by hour and day by day by a single insect, and other insects in the same flight may pass through a locality in the same direction, not merely for hours and days, but sometimes for weeks and even months.

By what interaction of external stimulus and internal response is this orientation effected ?

The problem is really a double one—first, for what reason and by what process does the species as a whole tend to move in one particular direction at a particular season of each year ?—and secondly, what is the mechanism by which a single individual is enabled to fly in the necessary direction at the correct time of the year ?

Evidence that must be taken into consideration in this discussion can further be divided into the general, or rules and facts which appear to apply to a number of species, and the special, which are known details of behaviour of single species or of single observed flights. In addition to this there are observations of apparent exceptional behaviour from which we might find useful suggestions.

Some of the general evidence that must be considered is as follows :

1. The majority of migrant Lepidoptera in the temperate zones move towards the equator in the autumn and away from it in the spring, thus bearing a close resemblance to the movements of birds. There are exceptions to this rule, as in the case of *P. brassicae* which has already been mentioned.

2. In the tropics direction and season are more confused, but flights of the same species tend to recur in the same direction and at the same season in different years. In Ceylon the main flights are at the beginning of the N.E. Monsoon in October and November with a second less definite season at the change of the N.E. to S.W. Monsoon in March, April and May. At Kodaikanal, in S. India, there is evidence that the October–November flights are towards the south and the March–May flights towards the north. In the foothills of the Himalayas in North India there is evidence of flights of several species up towards the N. or N.W. in March–April–May at the beginning of the hot weather, and down again to the plains towards the south in September and October. The seasons and directions in both North and South India correspond to the general rules for the north temperate zone, and it must be remembered that the extreme South of India is 10° north of the equator, and that a large part of Northern India is geographically outside the tropics.

3. In about twenty species of Lepidoptera there is evidence of flights in opposite directions at different times of the year. The number of insects in one of these flights is usually much greater than in the other. In one flight the insects may be gregarious, and in the reverse flight they may be widely separated ; as a result of this the flight in one direction may be conspicuous to the general public, and so frequently recorded, while the movement in the opposite direction is only seen by a careful observer. The evidence available may thus be biassed in favour of flights in one direction at one season only (see Williams *et al.*, 1941 : 240).

4. Nearly all butterflies when on migration tend to fly at the height which is normal for non-migratory flight, most individuals are below 10 feet, and few more than 20 feet above the ground, or above the tree tops if over forest land. The Monarch is an exception to this, and has frequently been recorded as flying in numbers up to " as far as the eye can see."

5. On reaching an obstacle most migratory butterflies pass *over* it rather than *round* it, when this is possible. This definite sense of orientation is often one of the most striking features of a flight. I have already described (Williams, 1930 : 331) how white butterflies (*Belenois mesentina*) in East Africa used to strike against the walls of my house in an effort to get towards the S.E.—and would eventually continue their journey by deviating back and up over the house, but not left or right to go round it. Butterflies on migration have flown

in numbers into a room through its windows, and in one case out again through windows on the opposite side. On meeting in their path small trees shaped like Lombardy Poplars—perhaps 10–15 feet high and 3–4 feet across—migrating butterflies have been seen to go up to the top and down the other side rather than deviate a few feet to the left or right.

6. A somewhat similar habit is seen, in reverse, when butterflies migrating over forest country come to a small clearing. They do not keep a level flight across the clearing but flutter down close to the forest edge, cross the clearing a few feet above the ground, and rise again close to the further edge. The same behaviour has been noted in N. America when migrants were crossing narrow canyons. If the forest is open, the butterflies may migrate between the trees.

7. Possible exceptions to (5) are occasionally seen. In my own experience the Skipper butterfly, *Andronymus neander*, in East Africa, when reaching a large obstacle such as a house or block of trees, rises and deviates slightly so as to continue the flight slightly off the original direction. On passing or overtopping the obstacle the original direction is resumed. Migratory butterflies have also at times been observed to follow the windings of deep valleys, of roads through forest, and of shorelines, but these cases are small in number compared with the number of observations of definite directional sense.

8. Butterflies and moths are capable of keeping their original direction both by day and by night, in sunny weather and in cloudy weather, in dead calm and in moderate winds, and in the tropics when the sun is completely overhead. We have only two records of the effect of fog, in one of which (in East Africa) the butterflies continued to fly and keep their direction ; in the other (in S. India) the butterflies retreated before a fog bank, " returning, however, again and again right up to the edge of the wall of fog."

9. There are a number of records of mixed flights of certain species in the same direction at the same time. There are also a few observations of simultaneous flights of two or more species, each flying in a different direction through the same locality for many days, and each keeping to their own direction (see Williams, 1930 : 365). For example, at Amani, Tanganyika, from the 20th December, 1928, to the end of January, 1929, in the sunny hours of every fine day between 11 a.m. and 3 p.m. there were two constant streams of butterflies, *Catopsilia florella* going to the north or north-east, and *Terias senegalensis* going to the south-west. On the 29th January there was, in addition, a flight of millions of locusts going to the south-east. The movements of each species had no apparent affect on the others.

10. In addition to the regular seasonal changes of direction which have been recorded in about 20 species, there are occasional records of changes in a short period of time. An interesting and unexplained example of this is found in *Ascia monuste* in Florida, which in three successive years was observed to fly along near the east coast at Indiatalantic from March to July, at first to the south and then quite suddenly changing to the north (see Williams *et al.*, 1941 : 143). In 1937, the northward flight only lasted for two days, 5th and 6th July, after which the southward flight was resumed. In 1938 a complete reversal took place on the 18th May and the flight was to the north from that date ; in 1939 the reversal was from the 10th and 11th June (see also below, p. 80).

Other cases of change of direction have been observed within a single day, and in two of these there was also a change of wind direction (see Williams, 1930 : 368, and below, p. 81).

Another remarkable observation was made by Carr in September, 1935, during a southward migration of *D. plexippus* which were flying in a belt about 12 feet wide over the water in a narrow inlet on the south side of Lake Ontario. On reaching one particular point the butterflies all turned to the east, flew for a few hundred yards in this direction and then turned sharply south again. Several thousand butterflies were seen and all day their behaviour was the same. At times there were breaks in the flight, but the new butterflies arriving from the north again turned to the east at the correct point (see Williams *et al.*, 1941 : 226).

(11) Butterflies on migration do not keep their body absolutely fixed in the direction of the migratory movement, as if kept in that position by a gyroscope. The body direction and even the direction of flight may alter from moment to moment owing to the buffetting of the wind, or by the choice of the insect in visiting flowers, or in some cases while pausing to lay eggs. After any such shorter or longer displacement the insect can bring the body direction back to the original. There is no force resisting *any* lateral displacement, but only resisting those which divert from the direction of the migration that is then in progress. After a night's rest butterflies resume the " correct " direction on the following day.

12. Flights may be in thick masses so that each individual is in sight of many other butterflies, and so a sense of imitation might play a part in keeping the mass moving in one constant direction. On the other hand the flight—with an equally definite sense of direction—may be so thin that each butterfly may be hundreds of yards from its nearest companion. I have seen a definite movement of *V. cardui* over the Mediterranean in July, 1922 (see Williams, 1923 : 210), when with the closest watch only about twelve butterflies per hour were seen, all going steadily to the north. They were flying about three feet above the sea and completely out of sight of each other. On land such a movement would be almost invisible.

All these general facts have to be kept in mind when discussing the problem of orientation. Other more detailed observations will be brought forward in connection with special theories.

There have been for many many years discussions on the mechanism of this exact and lasting power of orientation which is found during migration not only in insects, but also in birds, fishes and some other animals. Among the various external factors that have been suggested as possibly connected are the following :

1. Factors having a direction :
    - Wind.
    - Light (sun and moon).
    - Magnetic field (compass direction).
2. Factors having a gradient in certain directions :
    - Temperature.
    - Humidity.
    - Barometric pressure.
    - Magnetic field intensity.
    - Coriolis force (earth's rotation).
3. Other factors :
    - Sight and retinal image movement.
    - Contours.
    - Scent.

It will be seen that the factors have been grouped according to whether they have a " direction " or merely a " gradient."

The wind, light, and magnetic field can be further separated on their variability.

The wind is very variable, from hour to hour or from minute to minute, with no regular sequence. In some localities a wind from a particular direction may prevail for a long period—or at certain times of the day. In localities near the shore there may be regular land and sea breezes in morning and evening. The night is usually much calmer than the day.

The rays of light from the sun are subject to a regular daily change of direction (except when obscured by cloud)—and also to an annual cycle of height above the horizon at mid-day and direction at sunrise and sunset. Anywhere within the tropics for one or two periods in the year the sun at mid-day is liable to be so close to overhead that it is difficult to imagine it being of any value for horizontal orientation. The direction of moonlight at night is even more complex.

The polarity of the magnetic field is more or less constant in most localities, but is subject at times to sudden violent disturbances due to " magnetic storms."

All these variations are of importance to us in seeking a relation of cause and effect, because if a " cause " is always present and invariable, it is impossible to show a connection with any supposed " effect." Thus if in any locality the wind should be always from the north and a flight always to the east, it would not be possible to argue that the two were connected ; but if the wind varied, then, if it were a true " cause," either direct or indirect, one would expect to find corresponding variation in the flight.

Of these possible factors, the one which has been most fully discussed, and about which it is easiest to obtain information in the field, is the effect of wind.

It is desirable to discuss the problem of wind in relation to orientation of flight in two stages :

> First, what is the effect of a wind in a particular direction on a flying insect, and from this can the insect be conscious of the direction of the wind ?
>
> Secondly, what evidence is there that the direction of migratory flight in nature is associated with, or determined by, the direction of the wind ?

I have already discussed at some length the effect of air currents on creatures, such as insects and birds, which are supported by their wings in the air (see Williams, 1930 : 381–4, and Williams *et al.*, 1941 : 227).

Briefly the conclusions there expressed, which I have seen no reason to modify, are as follows :

1. An insect flying in an absolutely steady wind would not be able to determine the direction of the wind except by observing the movement of objects on the ground in relation to its own direction of flight through the air (i.e. the direction of its body axis).

2. Such constant winds are not found in nature, but the structure of the normal wind with its eddies, as now recognized by meteorologists, sometimes makes it physically possible for the insects to determine the direction of the wind from the nature of the " buffetting " they receive, without sighting the ground. But apparently there are other times (when the temperature gradient upwards is sub-adiabatic or when there is an actual temperature inversion) when the eddies of the wind give no clue to its main direction.

Most, but not all, insects migrate over land within a short distance of the ground, so that sight might well play a part in wind perception, as it makes it possible for the insects to be aware of their drift.

Thus it seems that from the buffeting effect of air pressure changes due to eddies in the wind and/or by sight insects may, in certain cases, be able to estimate the direction, and perhaps the strength of the wind. This is not equivalent to saying that the insects do make use of these methods in orientation for a migratory flight—merely that it is possible.

Let me now summarize some of the evidence, partly from personal experience, that has brought me to the conclusion that while wind direction may affect slightly the direction of a migration, it is not, in the vast majority of cases, the

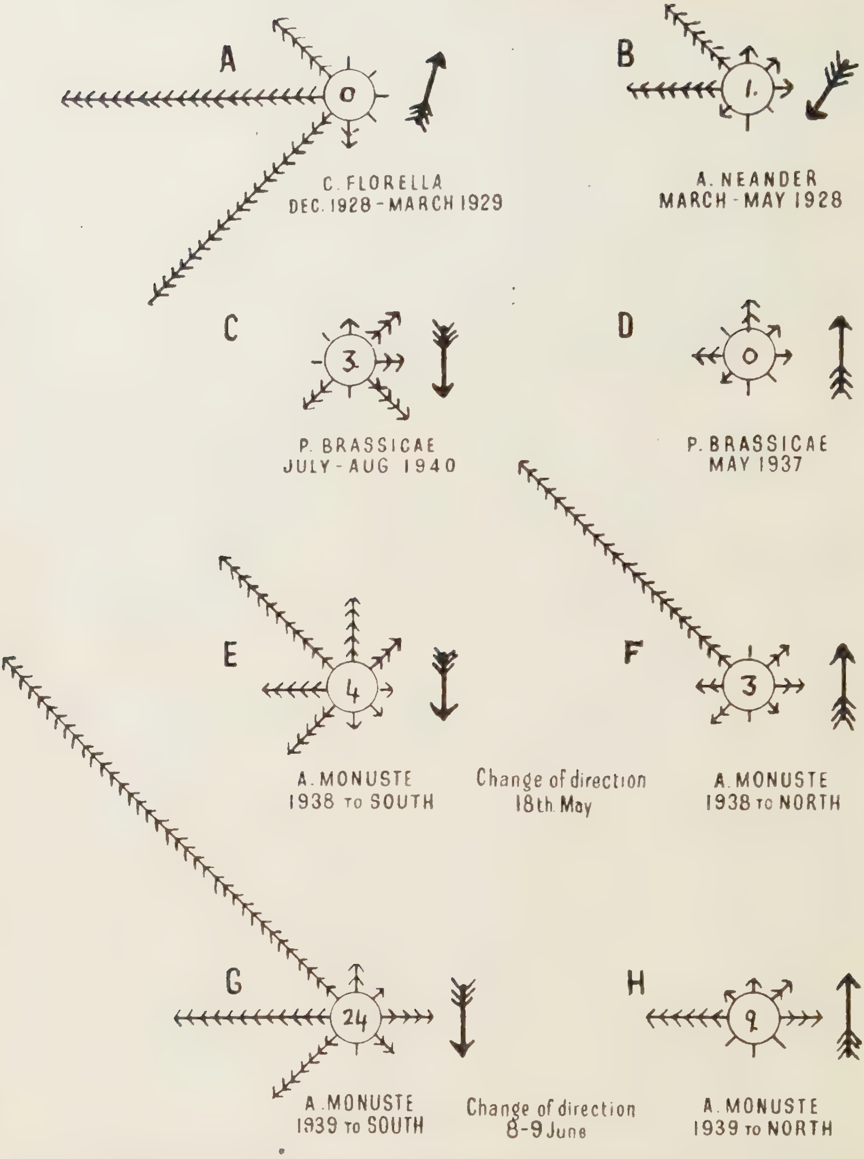

Fig. 1.—The direction of wind on different days during migratory flights of butterflies which continued steadily on in one direction for a number of days. The large arrow shows the direction of the butterfly movement. The small arrow-heads show the direction *towards which* the wind was blowing on different days during the flight. The number within the circle shows the number of days when " no wind " was recorded at the time of the observation.

A. *Catopsilia florella* at Amani, Tanganyika; observed by C. B. Williams flying to the north or north-east from 19th December, 1928, to 24th March, 1929 (and flight continued after this date). Flight direction and wind recorded on 47 days.

B. *Andronymus neander* at Amani, Tanganyika; observed by C. B. Williams flying to the south from 21st March to 7th May, 1928. Flight and wind direction recorded on 19 days.

factor which determines the direction of the flight or keeps it constant over a period of time.

In 1930 (Williams, 1930 : 368–375) I published an analysis of 367 recorded observations of directional flight in butterflies in which the direction of flight and wind had both been recorded. The results were as follows :

	Angle between Flight and Wind.	*Number of Records.*
With the wind	0°	84
Diagonally with the wind	+45°	30
	−45°	19
Across the wind	+90°	35
	−90°	34
Diagonally against the wind	+135°	45
	−135°	33
Against the wind	±180°	87

Flights were at every possible angle to the wind, but the records are more frequent directly with and directly against the wind than across it. This difference may be due to a selection of evidence in recording, as I think the non-specialist observer is more likely to record the wind direction if it is either with the flight (how simple an explanation !), or against it (how curious !), than if it is merely across the flight, and so with no apparent connection.

In 1938, K. Fisher published a diagram showing the relation to the wind direction of recorded flights within a single species, the Silver-Y Moth (*Plusia gamma*). In 42 recorded flights in the British Isles, every possible angle to the wind was found. Three flights were with the wind, five and eight diagonally with the wind on each flank, three and eight across the wind, five and two diagonally against the wind, and eight directly against the wind (see Fisher, 1938 : 237).

Thus we see that, considering either Lepidoptera as a whole or one species in many flights, there is no evidence of any constant relation of flight to wind direction.

Possibly of even greater significance are observations on certain migratory flights of butterflies which have continued over long periods in the same direction. Fig. 1 shows data during six such flights, three from my own personal experience,

Fig. 1—*continued.*

C. *Pieris brassicae* at Harpenden, England, observed by C. B. Williams from 14th July to 7th August, 1940, flying to the south on all days except one. Flight direction and wind recorded on 16 days.

D. *Pieris brassicae* at Harpenden, England, observed by Mrs. K. Grant flying to the north from 24th to 30th May, 1937. Flight and wind direction recorded on 7 days.

E. *Ascia monuste* at Indiatlantic, E. coast of Florida. Observed by Mr. and Mrs. K. Hodges flying to the *south* from 7th March to 16th May, 1938. Flight and wind direction recorded on 37 days. On 18th May the flight direction changed suddenly to north (see F).

F. As E. Flight to *north* from 18th May to 27th July, 1938 (compare with E). Flight and wind direction recorded on 34 days.

G. As E. Flight to *south* from 1st March to 10th June, 1939. Flight and wind direction recorded on 87 days. On the 9th and 10th June the flight direction changed to north (see H).

H. As E. Flight to *north* from 8th June to end of July, 1939. Flight and wind direction recorded on 22 days. On 8th and 9th June flights were observed in both directions (compare with G).

one from Mrs. K. Grant (Fisher) who worked with me at Rothamsted for several years, and two from Mr. and Mrs. K. Hodges in Florida.

In East Africa in 1928–29 I observed a migration of a yellow butterfly (*Catopsilia florella*) towards the north and the north-east which lasted for 16 weeks and was still continuing when I left the country in March, 1929. During this season there is, unfortunately for the analysis, a prevailing N.E. and E. Monsoon wind ; in fact, on none of the 47 days when both flight and wind direction were recorded, was there a wind from any quarter from S. to N.W. inclusive (Fig. 1A). There were, however, winds from N. (2), N.E. (19), E. (20) and S.E. (6). Throughout all this period the butterflies never flew in any direction except between N. and N.E. That is to say the wind ranged over 125° while the flight varied less than 45°.

In the same locality in March–May, 1928, there was a flight of a Skipper butterfly, *Andronymus neander*, towards the south-west for about six weeks. Fig. 1B shows the wind direction on 19 days during this period. At this season the prevailing N.E. Monsoon is giving place to a S.E. Trade Wind. It will be seen that, while most of the recorded winds were from the E. and S.E., there were single days with wind from all directions except from the N. and N.W. without any change in the flight direction.

Coming nearer home, Fig. 1C shows a similar analysis of a flight of *Pieris brassicae* at Harpenden, 25 miles north of London, in July–August, 1940. The flight was always towards the south, while the wind was in every quarter except from the S.E. and S. On three days conditions were recorded at the time of observation as "dead calm." Fig. 1D shows another flight of the same species observed by Mrs. K. Grant in May, 1937, when on nine days the wind ranged round the compass in all directions except from N., N.W. and S.E., without any alteration in the direction of the flight of the insects.

The four remaining diagrams (Fig. 1. E–H) show wind directions during two remarkable flights of a white butterfly, *Ascia monuste*, observed by Mr. and Mrs. K. Hodges at Indiatlantic, on the east coast of Florida in 1938–9. In both years the butterflies flew southwards in enormous numbers from March to May or June, and then quite suddenly changed their direction and flew towards the north until the end of July in gradually lessening numbers. There is some evidence, from the proportion of different varieties in the flight, that the population which flew to the north was not the same as that which had previously moved to the south.

In this district there is unfortunately a prevailing S.E. wind for most of the period under review, but in 1939 easterly winds were more common than usual, especially in June and July. In 1938 the change from southerly to northerly flight was on the 18th May, and it will be seen by comparing E. and F. that there was no associated change in wind direction, and further that both before and after the change in flight direction the wind (though usually S.E.) ranged round the compass in all directions.

Figs. G and H show events in 1939 when the change of direction did not take place until the 8th–9th June. Again, the wind direction, both before and after the change, ranged round all points of the compass. In the two years there were 4+24 days when the flight was to the south and the day recorded as calm, and 3+9 days when under exactly similar absence of wind, the insects flew to the north.

It seems to me almost impossible to believe that in any of the cases quoted above, wind can have any association of cause and effect with the duration of the flight.

It is, however, necessary to add that I know of two cases when a change of flight direction has been seen in association with a change of wind. Pendlebury

(1921) records that at Gaza, Palestine, for several days in April, 1917, *V. cardui* flew to the N.W. for about an hour from 9.30 a.m. and in the late afternoon, about 5 p.m. they returned in the opposite direction in smaller numbers. A sea breeze from the N.W. started about 9 a.m. each day and lasted until 5 p.m., when a land breeze from the S.E. would begin. No directional flight was recorded during the middle of the day.

Moss, in 1872, states, without any details, that he has seen butterflies in Ceylon going down a valley with the wind in the early part of the day, and later, when the wind had changed, the butterflies were flying up the valley. It is curious that in these two records the insects in one were flying always against the wind, and in the other, with it.

Goeldi (1904) records that at Para, Brazil, for several successive days in 1879 he saw *Catopsilia statira* flying in great numbers up a river towards the south in the morning and down stream to the north after mid-day ; but he does not mention the wind direction in either case.

Considering for a moment more general movements, the butterflies in Europe move in the spring in a northerly direction when the prevailing winds are from the N.W. or W., and in the autumn towards the south when the prevailing winds are from the S.W.

In the eastern United States in the autumn when *D. plexippus* and other species are moving towards the S. and S.W. the winds at ground level are very confused. Maps from the U.S. Weather Bureau show prevailing S.W. winds along the whole eastern coast in August ; in September and October the same winds prevail north of the latitude of Washington, but are replaced by a N.E. wind south of this level. At higher levels in the air the winds become more definitely S.S.W. to S.W. and W. Thus, at ground level there are no prevailing winds to guide the insects towards the S.W., and at higher levels there are no winds that would carry them willy-nilly in that direction.

In Egypt there is, at ground level, a prevailing wind from the north during the period from March to June when butterflies, and particularly *V. cardui*, tend to move towards the north.

There remains the possibility that insects might react differently to winds at different temperatures or intensities. In Egypt, for example, the prevailing north winds are cool and the south winds hot. If insects flew into cool winds and away from hot winds, a directional flight to the north might be produced. Fisher (1938) made a small study of the relation of the direction of flights of *Plusia gamma* to winds of different intensity, but could find no evidence of change of effect with Beaufort number. Both these problems require further investigation.

It has been suggested that flight direction might be determined by a combination of wind direction and the reaction of the individual insects to the relative movements of the ground as indicated by the image produced on the retina of their eyes. Insects are said to orientate so that :

1. There is a minimum lateral movement of the image on the retina.
2. There is never a backward movement of the image (i.e. the insect never flies against a wind which is faster than its own air speed).
3. The forward movement does not exceed a certain maximum speed.

If my reasoning is correct, there can only be an absence of lateral drift, and hence of lateral movement of the retinal image, if there is absolutely no wind, or if the insect is flying either directly with, or directly against the wind. We have, however, seen from the records already brought forward that there are numerous observations of insects flying for days across the wind.

It is interesting to note in this connection, that there are two observations, one made by myself on Locusts in Tanganyika in 1928, and one by Gleason on

Skipper butterflies in New Mexico in 1940, of insects changing the direction of their air flight during lateral gusts of wind, so as to allow for the gust and keep their direction relative to the ground constant.

In the case of the locusts, when there was no wind they were flying to the N.E. with their bodies, of course, orientated in the same direction. When the rather gusty wind blew from the S.E., across the flight, the locusts turned their bodies approximately to the east (slightly into the wind), while their ground direction, resulting from the combination of their air speed and direction and that of the wind, remained towards the N.E. In this case a lateral retinal movement must have been produced in order to keep their ground direction the same as when there was no wind. Gleason's observations on the butterflies were entirely in agreement with the above.

There is not time to deal in the same detail with the other external factors that might be involved in orientation ; nor is it indeed possible, as comparatively little information is available on some, and little or no evidence of association in others.

It is only possible to believe that the direction of the sun's rays is a determining factor in orientation of migrating insects (the so-called light-compass reaction) if the insect can allow at each hour of the day for the changing position of the sun. It is true that migration is usually more conspicuous during direct sunshine than during cloud, but then, so is all insect flight ; and migrations have been recorded in conditions of cloud when there was no very obvious direction of light rays. Another difficulty is that the insects—after allowing all day for the changing position of the sun—must be also supposed to carry on this adjustment during the night, for the following morning the flight starts at the same angle to the sun as the previous morning, and not at the angle of the previous evening. Still another difficulty is that butterflies can orientate with accuracy in the tropics at mid-day when the sun is overhead, when no horizontal change in the body direction would make the slightest difference to the angle of the sun's rays.

The difficulties of explanation in the case of all the millions of moths that fly at night, at full moon and at no moon, are even more formidable.

The study of the polarity (compass direction) of the magnetic field in relation to migration orientation remains in an unsatisfactory condition. Laboratory experiments that were carried out at Rothamsted (Cockbill, in Williams *et al.*, 1941 : 236) failed to produce any orientation or other effect on young locusts when these were submitted to a powerful electro-magnetic field. The experiment was inconclusive, and the insects were, of course, not migrating at the time. I would like to have a powerful apparatus—perhaps similar to that used during the war for detonating electro-magnetic mines at sea—that would upset the electro-magnetic field over several acres of land, and use it in East Africa during one of the spectacular migrations of *Belenois*, *Catopsilia* or *Andronymus* species which occur there at comparatively frequent intervals. Then one might be in a position to argue about the influence of magnetic fields. No one has yet succeeded in producing a directional migration under laboratory conditions, so even if laboratory experiments have been unsuccessful, it is no proof of lack of effect. I do not think that magnetic polarity is likely to be the cause of orientation—although it is an attractive theory—but in view of the comparative lack of variation in the magnetic field at any locality, until we have had experimental interference with a real migration we will not be in a position to lay down the law.

The factors that I have listed as subject to a gradient suffer from a common difficulty, as an explanation of orientation. Their variation in one locality from hour to hour is as great as is likely to be produced by movement over a considerable distance. If we suggest that a migration is moving towards a warmer or wetter locality, we must ask ourselves what actually happens to each individual insect at each minute. Any insect which sets off on a journey at, say, 10 a.m. is extremely likely to move into warmer conditions, whichever direction it goes, and also if it stays still. If it sets off about 4 p.m. every direction will be to a cooler locality. If it was believed that certain insects were flying towards England from France because England was cooler, it would be also necessary to believe that the insects during the morning hours were flying into warmer and warmer areas because they were aware that at the corresponding time to-morrow it would be cooler. The " average " temperature on which so many isotherms and gradients are built up has no existence. It is a convenient scientific fiction. All that the insect could possibly appreciate would be that the air through which it was flying was warmer (or cooler, or wetter or drier) than the air through which it had been flying some short time before in another locality at a different moment in the daily cycle of change.

The same argument applies to pressure gradients. In most temperate climates the changes in barometric pressure that occur during, say, one hour at a fixed locality are comparable in size with any that would be likely to be produced by moving at the average insect speed (say 10 m.p.h.) to a new locality one hour's flight away.

The magnetic field intensity and the Coriolis force have recently been brought into this field of discussion by the work of Yeagley on the homing of pigeons in the U.S.A. The Coriolis force is the force, due to the rotation of the earth, which produces movements of the air in easterly or westerly directions, and causes the cyclonic winds to rotate in opposite directions in the northern and southern hemispheres. It is absolutely constant at any one locality and its strength is only dependent on latitude. The intensity of the magnetic field is slightly variable at any one point, and is greatest at the magnetic poles and least at the magnetic equator. It is subject at times to sudden changes due to magnetic storms.

No work, or suggestion of work, on these factors has been done on insects, and the student is referred to Yeagley's report (1948). The forces concerned are almost infinitesimally small, and it has been calculated that if a bird flying towards the north or south deviated as much as one inch in 50 yards from the dead straight line it would produce a turning effect equal to that of the Coriolis force. Yeagley's work is stimulating, but much of it requires repeating and confirming.

Of the three remaining possible factors, sight can have an effect, already discussed, by enabling an insect to estimate and allow for lateral drift due to the wind—but I can see no mechanism by means of which sight could be used to keep an insect flying an approximately straight line for a hundred miles or more over land and sea in still air or in changing winds.

Land contours undoubtedly occasionally have a small effect in causing diversion from a regular course, but there is no evidence to suggest that they can determine the direction over any considerable distance.

Scent has been suggested—but I fail to see how it could have any effect other than in association with wind. It would result, if an attractive scent was the cause, presumably in flight into the wind—and if a repellent, in flight with the wind. It would fail completely to explain continued movements over great distances, either on the land or over the sea, and all flights across the wind.

Unless we postulate unknown factors, such as a " sense of direction," there remains only a combination of several different methods. Does the migrating insect orientate at one time by wind, at another by sun— and so on ? This is possible, but in my opinion unlikely, and in any case could not be a complete explanation. Unless a new stimulus was available when the previous one ceased to be effective, and unless two stimuli were not in operation, or not effective, at the same time, we would be left with the difficulty that the insect would have to decide at any particular moment which external factor to follow. If an insect follows the wind when this guides it to the north, but the sun when the wind changes to an unfavourable quarter, then we must credit it with knowing which of the two external stimuli is the correct one to take into action, and so with a knowledge of the direction in which it wishes to go. This leaves us with a problem as difficult as the one we have set out to solve.

There are other conceivable physical factors—even Cosmic rays—but no evidence at present is available—no experiments have been carried out—and no organ in the body of the insect is known that might be sensitive to these or other radiations.

We are left in the position of having to admit that the problem is not yet solved. It is a mystery in the sense—and only in the sense—that we have not yet found the answer. I believe the answer will be found in the field of biology and physics, and possibly comparatively soon. But many experiments will be required, not only in the laboratory but also in the field. More experiments—more observations—more thought—more workers—more time.

I see no opportunity ahead for resting on our laurels.

REFERENCES.

CARR, V. C., *in* Williams, *et al.*, 1942 : 226.

FISHER, K. J., 1938, Migration of the Silver-Y-Moth (*Plusia gamma*) in Great Britain. *J. Anim. Ecol.* **7** : 230–247.

GLEASON, P. R., *in* Williams, *et al.*, 1942 : 231.

GRANT, K. J. (FISHER), 1938, A Migration of Cabbage-White Butterflies in Hertfordshire in May, 1937. *Entomologist* **71** : 103–107.

GOELDI, A. E., 1904, Grandiosas Migrações de Borboletas no Valle Amazonico. *Bol. Mus. Goeldi* **4** : 309–316.

KIRKPATRICK, T. W., *in* Williams, 1927 : 249.

MATHEW, G. F., 1862, Captures at Sea. *Weekly Ent.* **1** : 62.

McGREGOR, E. A., 1924, Painted Lady Butterfly (*Vanessa cardui*). *Insect Pest Surv. Bull., U.S.* **4** (3) : 70.

MOSS, B., 1872, Migration of Butterflies. *Field* **40** : 623.

PENDLEBURY, W. LE M., 1922, Daily Migrations against a Land and Sea Breeze by *Pyrameis cardui*. *Proc. ent. Soc. Lond.* **1921** : xvi–xvii.

WILLIAMS, C. B., 1917, Some Notes on Butterfly Migration in British Guiana. *Trans. ent. Soc. Lond.* **1917** : 154–164.

——, 1923, Records and Problems of Insect Migration. *Trans. ent. Soc. Lond.* **1923** : 207–233.

——, 1927, Records of Migratory Insects chiefly from Africa. *Bull. Soc. ent. Egypte* **10** : 224–256.

——, 1930, *The Migration of Butterflies.* Edinburgh. (Oliver & Boyd.)

——, 1933, Observations on the Desert Locust in East Africa from July, 1928, to April, 1929. *Ann. appl. Biol.* **20** : 463–497.

WILLIAMS, C. B., COCKBILL, G. F., GIBBS, M. E., and DOWNES, J. A., 1942, Studies in the Migration of Lepidoptera. *Trans. R. ent. Soc. Lond.* **92** : 101–283.

YEAGLEY, H. L., 1948, A Preliminary Study of a Physical Basis of Bird Navigation. *J. appl. Phys.* **18** (12) : 1035–1063.

LIST OF FELLOWS

OF THE

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

HONORARY FELLOWS

Date of Election.

1915 ‡ Howard, Dr. L. O., *Ex-Chief, Bureau of Entomology, U.S. Dept. of Agriculture, Washington, D.C., U.S.A.*

1946 Lima, Dr. A. da Costa, Professor of Entomology, *Escola Nacional de Agronomia, Universidade Rural, Rio de Janeiro, Brazil.*

1931 ‡ Silvestri, Prof. F., *R. Istituto Superiore Agraria, Portici, Naples, Italy.*

1937 Snodgrass, R. E., *Bureau of Entomology, U.S. Dept. of Agriculture, Washington, D.C., U.S.A.*

1937 Weber, Dr. Hermann, *Zoologisches Institut, Holderlinstrasse* 12, *Tübingen* 14B, *Germany.*

SPECIAL LIFE FELLOWS

Date of Election.

1944 ‡ (1904) Blair, Kenneth G., D.Sc. (President, 1940–1; V.-Pres., 1942; Council, 1918–20, 1931–3, 1942), *Pentwyn, Freshwater, Isle of Wight.*

1948 ‡ (1909) Britten, Harry, 22, *Birch-grove, Levenshulme, Manchester.*

1948 ‡ (1904) Cockayne, E. A., M.A., D.M., F.R.C.P. (President, 1943–4; V.-Pres., 1927, 1939; Council, 1915–17, 1926–8, 1939–41, 1945), 8, *High-street, Tring, Herts.*

1947 ‡ (1902) Edelsten, H. M., O.B.E. (V.-Pres., 1928, 1937, 1938; Council, 1926–8, 1937–9), *Bramble Hill, Balcombe, Sussex.*

1944†‡(1912) Imms, A. D., M.A., Sc.D., F.R.S. (President, 1936–7; V.-Pres., 1920, 1930, 1935, 1938; Council, 1919–21, 1930–2, 1935, 1938), *Faldenside, Tipton St. John's, nr. Sidmouth, Devon.*

1945†‡(1894) Jordan, K., Ph.D., F.R.S. (President, 1929–30; V.-Pres., 1909, 1926, 1931, 1933; Council, 1909–11, 1924–6, 1931, 1933–5), *The Museum, Tring, Herts.*

1944†‡(1885) Lloyd, R. W. (V.-Pres., 1924, 1928, 1932, 1933; Council, 1900–3, 1923–5, 1928–30, 1932–4), I, 5, *Albany, Piccadilly, London*, W. 1.

*1945†‡(1899) Main, Hugh, B.Sc., F.Z.S. (V.-Pres., 1941; Council, 1908–10, 1939–41).

1945 ‡ (1903) Neave, S. A., C.M.G., O.B.E., M.A., D.Sc., F.Z.S. (President, 1934–5; Secretary, 1919–33; V.-Pres., 1918, 1931, 1936; Council, 1916–18, 1936), *Mill Green Park, Ingatestone, Essex.*

1931 (1905) Powell, H., *Ifrane, Morocco.*

1942 ‡ (1908) Talbot, G., 31, *York-road, Woking, Surrey.*

1948 ‡ (1893) Turner, H. J., F.R.H.S. (V.-Pres., 1930; Librarian, 1921–9; Council, 1910–12, 1930), *Latemar*, 25, *West Drive, Cheam, Surrey.*

1943†‡(1901) Waterhouse, G. A., D.Sc., B.E., *Australian Museum, College-street, Sydney, New South Wales, Australia.*

FELLOWS.

(*The names of those who have not yet paid either the Entrance Fee or the first year's subscription are not included.*)

*Marked * died during the year* 1948.
Marked † have compounded for their Annual Subscriptions.
Marked ‡ have been formally admitted into the Society (*to December*, 1948).

Date of Election.
1946 Abbott, P. H., B.A., M.R.C.S., L.R.C.P., *Civil Hospital, Li Rangu, Equatorial Province, Sudan.*
1947 ‡ Abul-Nasr, S. E., Ph.D., *Faculty of Agriculture, Giza, Egypt.*
1945 Adams, C. V., F.Z.S., 16, *Munroe-gardens, Alma-road, Plymouth.*
1938 Adams, P. C. G., *European Hospital, N'Kara, Northern Rhodesia.*
*1902‡ Adkin, B. W.
1947 ‡ Agarwala, S. D., Ph.D., c/o N. B. Das Agarwala, *Gardanibagh, Patna, Bihar, India.*
1943 ‡ Airy-Shaw, H. K., B.A., *Royal Botanic Gardens, Kew, Surrey.*
1921 Alexander, Prof. C. P., *Fernald Hall, Massachusetts State College, Amherst, Mass., U.S.A.*
1931 Alfieri, Anastase, General Secretary and Curator of the Fouad 1st Entomological Society, *P.O. Box* 430, *Cairo, Egypt.*
1938 Alfrey, J. I., *The Bombay Fire Insurance Association*, 6, *Rampart Rau Fort, Bombay, India.*
1946 ‡ Allan, I. R. H., 4, *Windhill, Bishop's Stortford, Herts.*
1944 ‡ Allan, P. B. M., M.A., 4, *Windhill, Bishop's Stortford, Herts.*
1943 Allen, Donald, F.R.P.S., F.R.S.A., 698, *Warwick-road, Solihull, Warwickshire.*
1940 ‡ Amery, J. W., *Ballamoar, Laxey, Isle of Man.*
1919†‡Andrewes, Dr. C. H., F.R.S. (Council, 1945–7), 34, *Ossulton Way*, N. 2.
1910†‡Andrewes, H. E. (Council, 1920–2), 8, *North Grove, Highgate, London*, N. 6.
*1922‡Andrewes, H. L.
1932 ‡ Andrews, E. A., M.A. (Council, 1943–5), 2, *Abbey-gardens, St. John's Wood*, N.W. 8.
1899 ‡ Andrews, Henry W. (Council, 1930–2), *The Rookery, Breamore, Fordingbridge, Hants.*
1908†‡Antram, Charles B., *Clay Copse, Sway, near Lymington, Hants.*
1948 Armitage, John, M.B.O.U., *Avocat, Heath Grove, Buxton, Derbyshire.*
1947 ‡ Armitt, J. H., 79, *Sarehole-road, Birmingham*, 28.
1948 Armstrong, M., M.A., B.Sc., *Aconbury, Walderslade-road, Chatham, Kent.*
1907 ‡ Arnold, G., O.B.E., D.Sc., A.R.C.S., F.R.S.S.A., Corr. M. Amer. ent. Soc., F.Z.S., *Box* 240, *Bulawayo, South Africa.*
*1899†‡Arrow, G. J. (Council, 1905–7).
1944 Arthur, D. R., M.Sc., 14, *Ullswater-avenue, Roath Park, Cardiff.*
1946 ‡ Ashby, D. G., *The Outlook, Haddenham, Isle of Ely, Cambs.*
1946 Ashforth, H., 24, *Woodman's Way, Two Hedges-road, Bishops Cleeve, Cheltenham, Glos.*
1921 Atkinson, D. J., c/o *Messrs. Grindlay & Co.*, 54, *Parliament-street*, S.W. 1.
1948 Atkinson, H. S., F.Z.S., *Rydal, Oakhill-avenue, Pinner, Middx.*
1928 ‡ Aubertin, Miss Daphne, M.Sc., F.L.S., *The Priory, Berwick St. John, Shaftesbury, Dorset.*

1946 Aubrook, E. W., *Tolson Memorial Museum, Ravensknowle, Huddersfield, Yorks.*
1930–41, 1945 Austin, M. D., *The Field Laboratory, Porters Farm, Gt. Braxted, nr. Witham, Essex.*
1945 ‡ Avery, R. F., M.A., 3, *Panmuir-road, West Wimbledon, S.W.* 20.
1913 Avinoff, A., *Hidden Hollow, Locust Valley, Long Island, New York, U.S.A.*

1904†‡Bagnall, Richard S., D.Sc., F.R.S.E., F.L.S., 2, *West Cromwell-road, Earls Court, London,* S.W. 5.
1948 Bagnall-Oakley, H. K., M.A., *Wargrave House, The College, Eastbourne.*
1909 ‡ Bagwell-Purefoy, Capt. Edward, F.Z.S. (Council, 1930–2), *The Cottage, East Farleigh, Kent.*
1943 ‡ Baker, Capt. D. B., 21, *Quarry Park-road, Cheam, Surrey.*
1934 Baker, F. T., *City and County Museum, Lincoln.*
1938 ‡ Balfour-Browne, J. W. A. F., M.A., F.Z.S., *British Museum (Natural History), Cromwell-road, London,* S.W. 7.
1921 ‡ Balfour-Browne, Prof. W. A. F., F.R.S.E., F.L.S., F.Z.S. (V.-Pres., 1934 ; Council, 1925–7, 1933–5), *Brocklehirst, Collin, Dumfries, N.B.*
1944 Balter, R. S. D., 18, *Ferncroft-avenue, Hampstead, London, N.W.* 3.
1946 ‡ Banerjee, S. N., M.Sc., Ph.D., Entomologist, West Bengal Govt., *Chinsura Agricultural Farm, Dist. Hooghly, W. Bengal.*
1947 Banner, J. V., M.R.C.S., L.R.C.P., *Wykehurst,* 41, *Varndean-gardens, Brighton,* 6.
1946 Barber, C. H., *Wingfield, Much Birch, Hereford.*
1947 Barker, T. W., B.Sc., 346, *Stones Villas, Walsden, Todmorden, Lancs.*
1946 ‡ Barnett, E., 64, *Whitworth-road, South Norwood, London,* S.E. 25.
1943 Barratt, Peter R., F.R.G.S., 88, *Manley-road, Oldham, Lancs.*
*1902‡ Barraud, P. J.
1936 Bartholomeuz, Dr. G. F., *Office of Medical Entomologist, Torrington-square, Colombo, Ceylon.*
1947 Basden, E. B., *Institute of Animal Genetics, King's Buildings, West Mains-road, Edinburgh,* 9.
1946 Bates, Marston D., *c/o Johns Hopkins School of Hygiene and Public Health,* 614, *North Wolfe-street, Baltimore, Maryland, U.S.A.*
1935 ‡ Baum, W. W., *Health Department,* 17, *Friar-lane, Leicester.*
1908 Bayford, E. G., 16, *Rockingham-street, Barnsley.*
1912 ‡ Baynes, E. S. A., 2, *Erkendale-road, Glenageary, Co. Dublin, Eire.*
1948 Beament, J. W. L., M.A., Ph.D., *Dept. of Zoology, Downing-street, Cambridge.*
1945 Beaufoy, S., B.Sc., A.M.I.E.E., F.R.P.S., 98, *Tuddenham-road, Ipswich, Suffolk.*
1913 ‡ Bedford, Capt. H. W., *c/o Pest Control Ltd., Harston, Cambridge.*
1920 ‡ Beeson, C. F. C., C.I.E., M.A., D.Sc., *Westway Cottage, Adderbury, Banbury, Oxon.*
1939 Beirne, B. P., Ph.D., *Sunninghill, Upper Glenageary-road, Glenageary, Co. Dublin, Eire.*
1943 Bell, A. Victor, *Eastholme,* 24, *Studley Villas, Forest Hall, Newcastle-on-Tyne.*
*1936 Bell, T. R., C.I.E.
1933 Benson, H. J. Craufurd, B.Sc., *The Cooper Technical Bureau, Berkhamsted, Herts.*
1925 ‡ Benson, R. B., M.A., Mem. Hon. Soc. ent. Belg.(V-Pres., 1943 ; Council, 1936–8, 1942–4), *British Museum (Natural History), Cromwell-road, London,* S.W. 7.

1946 ‡ Bentley, E. W., *c/o Ministry of Agriculture*, 58, *High Holborn, London*, W.C. 1.
1937 Berkeley, M. S., *Kitale Club, P.O. Box* 30, *Kitale, Kenya.*
1946 Bernacca, J. P., B.Sc., *P.O. Box* 41, *Kampala, Uganda.*
1942 ‡ Bessemer, H. Douglas, B.A., F.C.A., F.R.P.S.L., 23*c, Cadogan Gardens, Sloane Square, London*, S.W. 3.
1913 ‡ Best-Gardner, Charles C., *c/o Barclays Bank Ltd., Neath, Glam.*
1946 Bett, W. R., M.R.C.S., L.R.C.P., 11, *The Avenue, Bedford Park, London*, W. 4.
1947 Bevis, A. L., *c/o The Museum and Art Gallery, City Hall, Smith-street, Durban, Natal, S. Africa.*
1937 ‡ Bhaduri, Lt.-Col. D. N., I.M.S., *c/o Messrs. Thos. Cook & Son, Hornby-road, Bombay, India.*
1947 Bhattacharjee, H., B.A., Directorate of Industries West Bengal, 11*b, Fern-road, Ballygunge, Calcutta* 19, *India.*
1946 ‡ Bickerstaff, F., 71, *Staithe-road, Bungay, Suffolk.*
1946 ‡ Biggs, Rev. H. E. J., 19, *Siward-road, Bromley, Kent.*
1944 Billes, D. J., *c/o Dept. of Agriculture, Head Office, Accra, Gold Coast.*
1935 Binns, H. R., O.B.E., M.A., *c/o E.A.V.R.O., P.O. Kabete, near Nairobi, Kenya.*
1944 Bird, J. F., *Redclyffe, Walton St. Mary, Clevedon, Somerset.*
1937 ‡ Blackiston, Maj. Hamilton, B.A., F.L.S., *Frieston Lodge, Old Shoreham-road, Hove, Sussex.*
1944 Blake, A. E., K.L.B., F.C.I., *Marokko*, 165, *Lynton-road, Harrow, Middx.*
1948 Bletchly, J. D., B.A., B.Sc., *c/o Lloyds Bank Ltd., Nailsworth, near Stroud, Glos.*
1943 Boddy, William, *Church Fenton, Tadcaster, Yorks.*
1937 ‡ Bodenheimer, Dr. F. S., *Hebrew University, Jerusalem, Palestine.*
1939 ‡ Bolwig, N., *University of the Witwatersrand, Johannesburg, S. Africa.*
1902 ‡ Bostock, E. D., *Alicoombe, Pelham-gardens, Folkestone.*
1948 Bottomley, T. L. C., 23, *Ryegate-crescent, Sheffield*, 10.
1948 Bowden, J., 21, *Springfield-road, Mangotsfield, Bristol.*
1894 † Bowles, E. Augustus, M.A., *Myddelton House, Enfield, Middx.*
1921 ‡ Box, H. E., *Departamento de Entomologia M.A.C., Ministerio de Agricultura Cría, Hotel Jardin, Maracay, Estado Aragua, Venezuela.*
1910 Boyd, Major A. Whitworth, *Frandley House, nr. Northwich, Cheshire.*
1905 Bracken, Charles W., B.A., 16, *De la Hay Villas, Plymouth.*
1946 ‡ Braddell, M. L., *Little Grove Priory, Chesham, Bucks.*
1948 Bradford, Miss B., M.Sc., *P.O.Dynamite Factory, Cape Province, Union of South Africa.*
1919 ‡ Bradley, Prof. J. Chester, M.Sc., Professor of Entomology and Curator of Invertebrate Zoology, *Cornell University, Ithaca, New York, U.S.A.*
1944 ‡ Braham, A. C., F.Z.S., 66, *Sheepridge-road, Huddersfield, Yorks.*
1946 ‡ Braid, K. E. P., A.M.I.E.E., 125, *Sandringham-crescent, South Harrow, Middx.*
1946 Brangham, Lt.-Col. A. N., 9, *St. Albans-grove, Kensington, London*, W. 8.
1946 Bredo, H., *Red Locust Control Service, Abercorn, N. Rhodesia.*
1947 ‡ Breese, M. H., B.Sc., D.I.C., *Dept. of Agriculture, Zomba, Nyasaland.*
1920 ‡ Brenchley, Winifred E., D.Sc., F.L.S., *Rothamsted Experimental Station, Harpenden, Herts.*
1944 ‡ Bretherton, R. F., M.A., *Ottershaw Cottage, Ottershaw, Surrey.*
1930 Breyer, Alberto, *Calle Maipu* 267, *Buenos Aires, Argentina.*
1948 Brian, M. V., *Dept. of Zoology, The University, Glasgow*, W. 2.
1941 Brindle, A., 134, *Smith-street, Nelson, Lancs.*

1936 ‡ Britton, E. B., M.Sc., (Editor, 1948 ; Council, 1948–), *British Museum (Natural History), Cromwell-road*, S.W. 7, and 97*a*, *Hare-lane, Claygate, Surrey.*

1942 ‡ Broadhead, Edward, D.Phil., *Zoology Dept., The University, Leeds*, 2.

1925 ‡ Brooks, C. J., 49, *Harvard Court, Honeybourne-road*, N.W. 6.

1938 Brooks, Capt. J. G., R.A.M.C., B.D.Sc., L.D.Q., *P.O. Box* 354, *Cairns, Queensland, Australia.*

1940 ‡ Broome, R. R., *Murstead*, 47, *Keswick-road, Boscombe, Bournemouth, Hants.*

1943 ‡ Brown, E. S., B.A., *Hailey Lodge, Hertford Heath, Hertford.*

1932 Brown, Captain F. Martin, *Fountain Valley, Colorado Springs, Colo., U.S.A.*

1945 Brown, J. Y., *Mosquito Control Officer, Medical Dept., Lagos, Nigeria*, and 48, *High-street, Odell, Beds.*

1910 Browne, H. B., M.A., *Woodleigh House, Aislaby, Whitby, Yorks.*

1930 Bucknill, The Rev. E. G., M.A., *St. Briavels, Lydney, Glos.*

1942 Bumstead, R. P., 7, *Devonshire-road, Cambridge.*

1947 Burley, W. J., *Dromona, Reskadinnick, Camborne, Cornwall.*

1945 ‡ Burnard, C. W., M.I.N.A., F.Z.S., *Northbrook-place, Bishops Waltham, Hants.*

1946 ‡ Burnett, G. F., *International Red Locust Control Service, Abercorn, N. Rhodesia.*

1945 ‡ Burnett, Lt.-Cmdr. R., R.N.V.R., *Abinger Hall, near Dorking, Surrey.*

1896†‡Burr, Malcolm, D.Sc., F.G.S., A.R.S.M. (V.-Pres., 1912 ; Council, 1903–4, 1910–12), *P.K.* 2198, *Beyoglu, Istanbul, Turkey.*

1920 Burras, A. E., *Windyeats Farm, Redlynch, near Salisbury, Wilts.*

1933 ‡ Burtt, E., D.Sc., Ph.D., D.I.C., *East African Tsetse Research Organization, Old Shinyanga, Tanganyika Territory.*

1943 ‡ Burtt, E. T., Ph.D., *Dept. Zoology, King's College, Newcastle-on-Tyne*, 1.

1922 ‡ Bushby, L. C., *Zoological Society, Regent's Park*, N.W. 8.

1920 ‡ Bushell, Capt. H. S., *Ravensholt, Harrow-on-the-Hill, Middx.*

1943 Busvine, J. R., Ph.D., *Two Elms, Braywick-road, Maidenhead, Berks.*

1947 Butler, A. C., B.A., *Canon ffrome Court, Ledbury, Herefordshire.*

1939 ‡ Butler, C. G., M.A., Ph.D., *Rothamsted Experimental Station, Harpenden, Herts.*

1912†‡Buxton, Prof. P. A., C.M.G., M.A., F.R.S. (President, 1942 ; V.-Pres., 1936, 1941, 1943 ; Council, 1926–8, 1935–8, 1943), *Grit Howe, Gerrard's Cross, Bucks.*

1946 Bythell, W. J. S., O.B.E., M.D., *Morville Hall, Bridgnorth, Salop.*

1933 ‡ Bytinski-Salz, Dr. H., *Tel-Aviv Museum of Natural History*, 16, *Lasalle-street, Tel-Aviv, Palestine.*

1937 Callan, E. McC., B.Sc., A.R.C.S., D.I.C., Ph.D., *Dept. of Entomology, Imperial College of Tropical Agriculture, Trinidad, B.W.I.*

1945 ‡ Callaway, S., *Beaufort, Ratfyn-road, Amesbury, Wilts.*

1917–24,1934 :
Cameron, A. E., M.A., D.Sc., *Dept. of Entomology, University of Edinburgh*, 10, *George-square, Edinburgh*, 8.

1902 ‡ Cameron, Commander Malcolm, M.B., R.N. (Council, 1919–20), 15, *Teesdale-road, Leytonstone, London*, E. 11.

1948 Cameron, T. W. F., M.B., Ch.B., *Highfields, Walderslade, Chatham, Kent.*

1923 ‡ Cameron, W. P. L., *Hunter's Croft, Hayward Road, Moffat, Dumfries.*

1923 ‡ Campbell-Taylor, J. E., *Bramblewick, Holly Bush Lane, Harpenden, Herts.*

1948 Capener, A. L., *St. George's Home for Boys, P.O. Box* 4, *Cleveland, Johannesburg, S. Africa.*

1948 ‡ Carayon, J., Dr. es-Sci., *Laboratoire d'Entomologie Coloniale, Muséum national d'Histoire naturelle*, 57, *rue Cuvier, Paris Ve, France.*

1924 ‡ Carlier, S. E. Wace, *Warwick Buildings, Warwick-road, Solihull, near Birmingham.*

1910†‡Carpenter, Prof. G. D. Hale, M.B.E., D.M. (President, 1945–6; V.-Pres., 1947; Council, 1934–6, 1947), Emeritus Hope Professor of Zoology (Entomology) in the University of Oxford, *Penguelle, Hid's Copse-road, Cumnor Hill, Oxford.*

1934 Castle, Rev. A. R., *The Manse*, 129, *Old Tovil-road, Maidstone, Kent.*

1948 ‡ Cater, Lt.-Col. J. H., I.M.S., *c/o Eastern Bank Ltd., Baghdad, Iraq.*

1889†‡Cave, Charles J. P., *Stoner Hill, Petersfield, Hants.*

1948 ‡ Chalmers-Hunt, A. J. M. B., 70, *Chestnut-avenue, West Wickham, Kent.*

1914 ‡ Champion, Prof. H. G., C.I.E., M.A. (Council, 1941–3), *Imperial Forestry Institute, Parks-road, Oxford.*

1936 Chapman, K. H., M.A., B.Sc., *Zoological Department, The University, Manchester.*

1938 Chartres, S. A., 9, *King's Drive, Eastbourne, Sussex.*

1945 ‡ Chatelain, R. G., 15, *Alleyn-park, West Dulwich*, S.E. 21.

1919 Chatterjee, N. C., D.Sc., *Forest Research Institute, Dehra Dun, U.P., India.*

1947 ‡ Chaudhuri, R. P., B.Sc., M.Sc., *Rothamsted Experimental Station, Harpenden, Herts.*

1897 ‡ Chawner, Miss Ethel F., *The White House, Leckford, Stockbridge, Hants.*

1913 ‡ Cheavin, W. H. S., F.C.S., F.R.M.S., 19, *Rosendale-road, West Dulwich, London*, S.E. 21.

1919–1939, 1947:
Cheesman, Miss L. E., 25, *Maiden-lane, London*, W.C. 2.

1920 ‡ Cheetham, C. A., *Austwick, via Lancaster.*

1942 ‡ China, W. E., M.A., D.Sc., *British Museum (Natural History), Cromwell-road, London*, S.W. 7.

1933 Chorley, J. K., *Agricultural Laboratory, P.O. Box* 387, *Salisbury, S. Rhodesia.*

1935 Chorley, T. W., *Senior Field Officer, Tsetse Control Department, P.O. Box* 17, *Masindi, Uganda.*

1933 ‡ Christophers, Col. Sir S. R., C.I.E., O.B.E., I.M.S., F.R.S., *Zoological Laboratory, The Museums, Cambridge.*

1945 ‡ Clarke, Camden, *Lock House, Branston, Burton-on-Trent.*

1946 ‡ Clarke, J. F. Gates, Ph.C., B.S., M.S., *Dept. of Entomology, British Museum (Natural History), London*, S.W. 7.

1941 ‡ Classey, Eric W., 5, *Carlton-avenue, Feltham, Middx.*

1935 ‡ Clay, Miss Theresa, B.Sc., 18, *Kensington Park-gardens, London*, W. 11.

1914 ‡ Cleare, L. D., Jr., *Dept. of Agriculture, Georgetown, British Guiana.*

1948 Cleaver, Capt. R. D. M., M.B.O.U., F.R.H.S., *Cavendish, Kromboom-road, Rondebosch, Cape, S. Africa.*

1908 Clutterbuck, C. Granville, *Heathside*, 23, *Heathville-road, Gloucester.*

*1917‡ Cockerell, Prof. T. D. A.

1934 Coghill, Dr. D., *Rathcoole, Stellenbosch, C.P., S. Africa.*

1944 Colhoun, W. P., M.B., 5, *Pump-street, Londonderry, N. Ireland.*

1922 ‡ Collenette, C. L., F.R.G.S. (V.-Pres., 1935; Council, 1934–6), 15, *Warren-avenue, Richmond, Surrey.*

1946 ‡ Collier, H. M., 11, *Greenbank-road, Darlington, Co. Durham.*

1899 ‡ Collin, James E. (President, 1927–8; V.-Pres., 1913, 1923, 1929; Council, 1904–6, 1913–15, 1923–5, 1929), *Raylands, Newmarket.*

1942 ‡ Collins, R. J., *Dept. of Entomology, British Museum (Natural History), Cromwell-road*, S.W. 7.
1946 ‡ Colyer, Capt. C. N., 26, *Ewart-grove, London*, N. 22.
1918–29, 1938 Comstock, Dr. J. A., *Los Angeles Museum, Exposition Park, Los Angeles, California, U.S.A.*
1947 Cooman, Rev. Père A. de, *Musée Heude*, 225, *Chung King-road (S), Shanghai* 25, *China.*
1946 ‡ Cooper, B. A., B.Sc., A.R.C.S., 27, *Spilsby-road, Boston, Lincs.*
1926 Cooper, Mrs. J. Omer, B.A., *Zoological Dept., Rhodes University College, Grahamstown, S. Africa.*
*1933‡Corbet, A. S., D.Sc., Ph.D., F.R.I.C. (V.-Pres., 1942 ; Council, 1941–3.)
1924 Corbett, G. H., B.Sc., *Downings*, 42, *King's Stone-avenue, Steyning, Sussex.*
1921 ‡ Corporaal, J. B., *Zoological Museum, Zeeburgerdijk* 21, *Amsterdam.*
1920 ‡ Cotterell, G. S., A.R.C.S., *Vanessa, Eleanor-road, Chalfont St. Peter, Bucks.*
1945 Couchman, Leonard E., 35, *Browne-street, West Hobart, Tasmania.*
1945 Court, T. H., *Oakleigh, Market Rasen, Lincs.*
1943 Cousins, R. J., A.C.P., F.Z.S., *High-street, Banwell, Somerset.*
1931 Cowland, J. W., *Gezira Research Farm, Wad Medani, Sudan.*
1931 ‡ Cowley, John, M.A., *Holywell House, Edington, Bridgwater, Somerset.*
1937 ‡ Cowper, J. D., 2020, *Short-street (Rear Appts.), New Orleans, Louisiana, U.S.A.*
*1931‡Cox, B. C.
1923 ‡ Cox, L. G., 1, *Chichester-terrace, Brighton*, 7.
*1933‡Cox, W. E.
1920 ‡ Crabbe, E., 20, *Burcote-road, Wandsworth Common, London*, S.W. 18.
1935 ‡ Craske, J. C. B., 33, *Hinchley Drive, Hinchley Wood, Esher, Surrey.*
1947 Crass, R. S., B.Sc., *Mooi River, Natal, S. Africa.*
1946 ‡ Craufurd, Clifford, *Denny, Galloway-road, Bishop's Stortford, Herts.*
1946 Crawford, H. G., *Department of Agriculture, Division of Entomology, Ottawa, Ontario, Canada.*
1928 ‡ Crewdson, R. C. R., *The Grange, Delamere, Northwich, Cheshire.*
1941 ‡ Crowson, R. A., B.Sc., A.R.C.S., D.I.C., *Zoology Department, The University, Glasgow*, W. 2.
1948 ‡ Cumber, R. A., *Cawthron Institute, Nelson, New Zealand.*
1947 ‡ Curle, R. H. P., *West Coker, nr. Yeovil, Somerset.*
1946 ‡ Currie, P. W. E., 102, *Burdon-lane, Belmont, Sutton, Surrey.*
1946 ‡ Curtis, A. E., *The Cottage, Ifold Estate, Loxwood, nr. Billingshurst, Sussex.*
1908 ‡ Curtis, W. P., *Flat* 2, *Acton Burnell, Braidley-road, Bournemouth.*

1930 Daintree, A. C., *P.O. Box* 292, *Lourenço Marques, Portuguese East Africa.*
1948 ‡ Dales, R. Phillips, B.Sc., 67, *Westmoreland-avenue, Squirrels Heath, Essex.*
1929 ‡ Daltry, H. W., *Bar Hill, Madeley, near Crewe.*
*1928 Dampf, Dr. A.
1936 ‡ Dannreuther, Capt. T., R.N., *Windycroft, High Wickham, Hastings, Sussex.*
1944 Darling, H. S., *School of Agriculture, Shambat, Khartoum North, A.E. Sudan.*
1944 Darlow, Surgeon-Lt. H. M., B.A., M.R.C.S., L.R.C.P., *Carr House, Glebe-road, Bedford.*
1944 ‡ Davenport, Miss R. M., 1, *Ashburn-place, London*, S.W. 7.
1948 David, W. A. L., M.A., Ph.D., 34*a*, *Storey's Way, Cambridge.*
1945 ‡ Davis, R. A., M.Sc., 2, *Simmonds Court, Earls Court Gardens, London*, S.W. 5.

1903 Day, F. H., *Blackwell Lodge West, Carlisle.*
1947 Deans, A. S. C., 28, *Morgan-road, Rosehill, Aberdeen.*
1947 Dearing, E., B.Sc., 10, *Bray road, Speke, Liverpool* 19.
1948 Debenham, Miss E. M., *Ministry of Agriculture and Fisheries, Pest Control Division,* 5, *St. Helen's Place, Bishopsgate, London,* E.C. 3.
1934 ‡ Denne, Capt. R. A., *Pear Tree Farm, Hever, Kent.*
1923 Dewar, D. A., M.B., C.M., *Altyre House, Stanley S.O., Co. Durham.*
1944 ‡ Dewberry, E. B., *Clare,* 16, *Hamilton-close, Epsom, Surrey.*
1948 Diakonoff, Dr. A., *Zoological Museum, Buitenzorg, Java.*
1930 ‡ Dibb, J. R., *The Cottage,* 30, *Plantation-road, Wollaton, Nottingham.*
1939 Dicker, G. H. L., *East Malling Research Station, nr. Maidstone, Kent.*
1946 Dickinson, K. Shallcross, M.R.C.S., L.R.C.P., Ph.C., *Arnold House, Arnold, Notts.*
1948 ‡ Dinnage, H., *Easton,* 130, *Manor-road, Stoughton, Guildford, Surrey.*
1943 ‡ Diver, Captain Cyril, C.B.E., *Rushmere Cottage, Frensham, Surrey.*
1946 Dobson, Ronald, 69, *Berkeley-street, Glasgow,* C. 3.
1909 † Dobson, Thomas, 65, *Waddington-road, Clitheroe, Lancs.*
1946 ‡ Donald, R. G., *West African Cocoa Research Institute, Tafo, Gold Coast.*
1943 ‡ Doncaster, J. P., B.A., *British Museum* (*Natural History*), *Cromwell-road,* S.W. 7.
1891 ‡ Donisthorpe, Horace St. John K., F.Z.S. (V.-Pres., 1911 ; Council, 1899–1901, 1910–12, 1931–3), 332, *Great West-road, Heston, Middx.*
1939 Doubleday, B. S., *Monks Risborough, Aylesbury, Bucks.*
1913 ‡ Dow, Walter James, *Penang, Guildford-road, Great Bookham, Surrey.*
1943 Dowdeswell, W. H., *Thornton House, Blundell's-avenue, Tiverton, Devon.*
1936 ‡ Downes, J. A., M.A., *Dept. Zoology, The University, Glasgow.*
1935‡ Dowson, Major V. H. W., *Charles, Felden, Hemel Hempstead, Herts.*
1946 Duarte, A. J., *Estacão Agronomica Nacional, Sacavem, Portugal.*
1944 du Bois, Captain John J., 205, *Wayside-drive, Turlock, California, U.S.A.*
1913–40, 1947 Duffield, C. A. W., M.C., J.P., *Pickersdene, Brook, near Ashford, Kent.*
1943 ‡ Duffy, E. A. J., 28, *Lansdowne-road, East Croydon, Surrey.*
1938 Dun, G. S., *Lowland Experiment Station, Kerawat, via Rabaul, New Britain.*
1945 Dunning, Rev. J. M., O.C.F., 88, *Grove Park-road, Mottingham,* S.E. 9.
1921 du Porte, E. M., *Macdonald College, Quebec, Canada.*
1944 ‡ Dyson, R. C., 112, *Hollingbury Park-avenue, Brighton,* 6.

*1910‡Eales-White, Major J. C., F.Z.S.
1924 Eastham, Prof. L., M.Sc., *Dept. of Zoology, The University, Sheffield* 10.
1940 ‡ Easton, A. M., M.B., B.S., M.R.C.S., L.R.C.P., *Roadside Cottage, Lower-road, Gt. Bookham, Surrey.*
1944 ‡ Easton, N. T., *Sulby Hall, Welford, near Rugby.*
1945 ‡ Edney, E. B., Ph.D., D.I.C., B.Sc., *Zoology Dept., The University, Edgbaston, Birmingham,* 15.
1916 ‡ Efflatoun Bey, Prof. H., *Dept. of Entomology, Faculty of Science, Fouad I University, Abbassia, Cairo, Egypt.*
1946 ‡ Eliot, Lt.-Col. J. N., R.A., 41 *Field Regiment, R.A., M.E.L.F.*
1944 Ellis, G., *Blodfryn, Bryn Pydew, Llandudno Junction, N. Wales.*
1939 ‡ Ellison, R. E., *c/o Foreign Office, London,* S.W. 1.
1927 Elliston-Wright, F. R., M.D., *Braunton, N. Devon.*
1946 Elmhirst, E. M., M.B., B.S., 28, *Hogarth-road, Earl's Court, London,* S.W. 5.
1925–31, 1944 Elton, C. S., M.A., *Bureau of Animal Population,* 91, *Banbury-road, Oxford.*
1927 ‡ Embry, B., 23, *Mill Drove, Uckfield, Sussex.*

1945 ‡ Empson, D. W., *Dept. Entomology, N.A.A.S.*, 7, *Redlands-road, Reading, Berks.*

1935 ‡ Evans, A. C., Ph.D., *United Africa Co.* (*M.A.*) *Ltd., P.O. Kongwa, Tanganyika Territory.*

1945 ‡ Evans, E. C., 26, *Towncourt-crescent, Pett's Wood, Kent.*

*1926 Evans, Col. G. H., C.I.E., C.B.E.

1947 Evans, H., M.Sc., *Natural Science Department, Derby Technical College, Normanton-road, Derby.*

1928 ‡ Evans, J. W., M.A., D.Sc. (Council, 1945–7), *Infestation Control Division, Ministry of Agriculture and Fisheries*, 58, *High Holborn, London*, W.C. 1.

1948 Farquar, Miss M. J., B.Sc., 6, *Artillery-road, Grahamstown, S. Africa.*

1925 ‡ Fassnidge, W., 4, *Bassett Crescent West, Southampton.*

1938 Faure, Prof. J. C., *University of Pretoria, Pretoria, Union of S. Africa.*

1933 ‡ Fennah, R. G., B.A., *Imperial College of Tropical Agriculture, St. Augustine, Trinidad.*

1945 Fenton, G. R., *Forest Dept., Wellington, New Zealand.*

1918 ‡ Fergusson, A., *Grangemount, Dunfermline, Fife.*

1938 ‡ Ferrier, W. J., 86, *Portnalls-road, Coulsdon, Surrey.*

1939 Ferrière, C., 45, *Florissant, Genève, Switzerland.*

1946 ‡ Ferry, R. Stanton, *Fulling Mill House, Welwyn, Herts.*

1938 ‡ Fisher, Lt. C. E., R.N.V.R., *City Museum, Park Row, Leeds*, 1.

1931 ‡ Fisher, Miss Katherine J. (Mrs. Richardson) (Council, 1937–8), *c/o Imperial Chemical Industries* (*China*) *Ltd.*, 133, *Szechuen-road, Shanghai, China.*

1898 ‡ Fletcher, Fleet Paymaster Thomas Bainbrigge, R.N., F.L.S., F.Z.S., *Rodborough Fort, Stroud, Glos.*

1944 ‡ Flint, J. H., A.L.A., 7, *Norfolk Mount, Leeds*, 7.

1922 Flower, Miss A. B., *Castle Rings, Dudsbury, near Longham, Dorset.*

1924 ‡ Ford, E. B., M.A., D.Sc., F.R.S. (V. Pres., 1943; Council, 1942–4), *Dept. of Zoology and Comparative Anatomy, University Museum, Oxford.*

1946 ‡ Ford, J., *East African Tsetse Research Organization, Shinyanga, Tanganyika Territory.*

1946 ‡ Ford, J. H., 32, *Roundwood-lane, Harpenden, Herts.*

1941 ‡ Ford, R. L. E., F.Z.S. (Council, 1947–), *Dunkeld*, 51, *Parkhill-road, Bexley, Kent.*

1932 ‡ Ford, W. K., M.Sc., 73, *Queen's-avenue, Meols, Wirral, Cheshire.*

1920 ‡ Fox-Wilson, G. (V.-Pres., 1940, 1941, 1947–8; Council, 1935–7, 1940–2, 1946–8), *Entomological Dept., R.H.S. Laboratory, Wisley, Ripley, Surrey.*

1948 Fraser, Angus, *The Haven Annexe, Marine-parade, Tankerton, Kent.*

1908 ‡ Fraser, Lt.-Col. F. C., M.D., I.M.S., *Mercara, Glenferness-avenue, Winton, Bournemouth, Hants.*

1943 ‡ Freeman, J. A., B.Sc., Ph.D., A.R.C.S., *Ministry of Food Infestation Branch*, 58, *High Holborn, London*, W.C. 1, and 9, *Wendover-road, Bromley, Kent.*

1938 ‡ Freeman, Paul, M.Sc., A.R.C.S., *British Museum* (*Natural History*), *Cromwell-road, London*, S.W. 7.

1937 ‡ Freeman, R. B., *Dept. of Zoology, University College, Gower-street, London*, W.C. 1.

1888 ‡ Fremlin, H. Stuart, M.R.C.S., L.R.C.P., *Heavers, Ryarsh, near West Malling, Kent.*

1946 ‡ Freshfield, G. P., A.I.M.L.T., *Cornerways*, 123, *Privett-road, Alverstoke, Gosport, Hants.*

*1907 ‡ Fryer, Sir John C. F., O.B.E., M.A. (Pres., 1938–9; V.-Pres., 1927; 1937, 1940–; Council, 1916–18, 1925–7, 1937, 1940.)

1930 ‡ Gabriel, A. G. (Council, 1942–4), 29, *Kingsend, Ruislip, Middx.*

1945 Galbraith, Dr. C. J., 29, *Union-road, Exeter, Devon.*

1941 Galbraith, W. A., M.B., Ch.B., *Curatehill, Law, Carluke, Lanarkshire.*

1936 ‡ Gambles, R. M., *Veterinary Research Laboratory, P.O. Vom, via Bukuru. N. Nigeria.*

1947 ‡ Gardiner, B. O. C., *Entomological Field Station,* 34*a*, *Storey's Way, Cambridge.*

1947 ‡ Gardiner, Miss P. C., B.Sc., *The Spinney, Whiteleaf, Aylesbury, Bucks.*

1948 Gardner, A. E., 55, *Northcroft-road, W. Ewell, Surrey.*

1920 Gardner, J. C. M., C.I.E., *c/o Messrs. Holt & Co., Kirkland House, Whitehall, London,* S.W. 1.

1901†‡Gardner, Willoughby, D.Sc., F.L.S., F.S.A., *Y Berlfa, Deganwy, N. Wales.*

1946 Gaul, A. T., B.S., 401, *Washington-avenue, Brooklyn S., N.Y., U.S.A.*

1945 Gauntlett, S. R., *Woodgreen, Fordingbridge, Hants.*

1919 ‡ Gedye, A. F. J., *P.O. Box* 216, *Nairobi, Kenya Colony.*

1947 Ghani, Mohammed Abdul, *Fernald Hall, University of Massachusetts, Amherst, Mass., U.S.A.*

1936 Ghesquière, Dr. J., 87, *Avenue de Castel, Brussels, Belgium.*

1922‡ Ghosh, C. C., B.A., *Bhogla, Mirzapur, Kundi and Sardarey Agricultural Farms, Balasore District, Orissa, India.*

1933 ‡ Gillett, J. D., 1, *Beulah-road, Walthamstow, Essex.*

1904 ‡ Gilliat, Francis T., B.A., 25, *Manor-road, Folkestone, Kent.*

1946 ‡ Gilmour, E. Forrest, *East View, Milnsbridge, Huddersfield, Yorks.*

1919 ‡ Gimingham, C. T., O.B.E., F.R.I.C. (Council, 1942–4), *Ministry of Agriculture, Pathological Laboratory, Milton-road, Harpenden, Herts.*

1930 ‡ Glegg, D. Lindsay, *Birchstone, Coombe Park, Kingston, Surrey.*

1947 Glegg, Harley, *Byways, Burrington, Bristol.*

1933 ‡ Glennie, Brigadier E. A., C.I.E., R.E., 99*a*, *Cross Oak-road, Berkhamsted, Herts.*

1921–28, 1947 Glick, Perry A., *U.S. Department of Agriculture, Box* 1218, *Waco, Texas, U.S.A.*

1945 ‡ Goddard, T. D., *Long Hoyle Farm, Heyshott, Midhurst, Sussex,* and 9, *College-road, London,* S.E. 21.

1946 ‡ Goffe, Capt. E. Rivenhall, *Winton Cottage, King's Somborne, Hants.*

1924 Golding, F. D., *c/o Barclays Bank, Ltd., Umkomaas, South Coast, Natal, S. Africa.*

1935 ‡ Golledge, C. J., 5, *Pleydell-avenue, Stamford Brook, London,* W. 6.

1947 ‡ Goodchild, A. J. P., *West African Cacao Research Institute, P.O. Box* 8, *Tafo, Gold Coast, B.W. Africa.*

1937 ‡ Goodliffe, E. R., B.A., *Penarth,* 7, *Lyonsdown-avenue, New Barnet, Herts.*

1925 ‡ Gordon, D. J., B.A., *The Manor House, Strathpeffer, N.B.*

1941 Gordon, Prof. R. M., O.B.E., M.D., Sc.D., M.R.C.P., *School of Tropical Medicine, Pembroke-place, Liverpool,* 3.

1948 ‡ Goto, H. E., 21, *Campden-crescent, N. Wembley, Middx.*

1945 Gracie, W. McAuley, M.B.E., *Ministry of Food, Gower-street, London,* W.C. 1.

1947 Graham, J. F., *Dept. of Agriculture, Box* 46, *Kitale, Kenya Colony.*

1943 Graham, M. W. R. de Vere, *c/o Mrs. Graham, Salmonby Rectory, Horncastle, Lincs.*

1927 Grandi, Prof. Dr. Guido, *Istituto di Entomologia, Università degli Studi, Via Filippo Re* 6, *Bologna* 125, *Italy.*

1911 ‡ Graves, P. P., *Ballylichey House, Bantry, Co. Cork, Eire.*

1942 Gray, W. J., *Veterinary Department, Mzimba, Nyasaland.*

1891†‡Green, E. Ernest, F.Z.S. (Pres., 1923–4; V.-Pres., 1915, 1925; Council, 1914–16, 1925), *Way's End, Beech-avenue, Camberley.*
1945 ‡ Green, R. A., *St. Germains, St. Michael's, St. Albans, Herts.*
1943 Green, T. L., B.Sc., 45, *Bedford-road, Firswood, Manchester*, 16.
1936 ‡ Greenslade, R. M. (Council, 1946–8), 100, *Windsor-road, Cambridge.*
1933 ‡ Greenwood, Lt.-Col. J. A. C., 105, *Firs Drive, Cranford, near Hounslow, Middx.*
1931 ‡ Gregson, Col. G. K., D.S.O., *Lye Green House, Withyham, Sussex.*
1928 ‡ Grensted, The Rev. Prof. L. W., M.A., D.D., *Oriel College, Oxford.*
1946 ‡ Griffin, Francis J., A.L.A., 29, *Bushy Park-gardens, Teddington, Middx.*
1905 Grist, Charles J., F.C.S., F.Z.S., *Brook House, Brewood, Staffs.*
1946 Griveau, M. P., *Pleine-Fougères, Ille-et-Vilaine, France.*
1937 Grove, L. R. A., B.A., *Municipal Museum and Art Gallery, Maidstone, Kent.*
1946 ‡ Grundy, J. H., *Pendleton House*, 41, *Villiers-road, Southall, Middx.*
1942 ‡ Gunn, D. L., D.Sc., Ph.D., F.Z.S., *Anti-Locust Research Centre, British Museum (Natural History), London*, S.W. 7.
1920 ‡ Gunton, Major H. C., M.B.E., *Rathgar, Gerrard's Cross, Bucks.*

1912 Hacker, Henry, *Queensland Museum, Brisbane, Queensland.*
1944 ‡ Hadaway, A. B., *Colonial Insecticide Research Unit, C.D.E.S., Porton, Wilts.*
1940 ‡ Haddow, A. J., *Yellow Fever Research Institute, Entebbe, Uganda.*
1946 ‡ Hadjinicolaou, J., M.Sc., *School of Hygiene, Alexandria-avenue* 1 *and* 6. *Athens, Greece.*
1945 ‡ Hafez, M., Ph.D., *Dept. of Entomology, Faculty of Science, Abassia, Cairo. Egypt.*
1947 Haggett, G., 1, *Torton Hill, Arundel, Sussex.*
1925‡ Haig-Thomas, P., *Harbridge House, Ringwood, Hants.*
1947 Hall, D. W., B.Sc., 20, *Ashley-terrace, Alloa, Clackmannanshire.*
1934 ‡ Hall, R. E., B.Sc., 4, *Glen Eyre Way, Bassett, Southampton.*
1921 ‡ Hall, W. J., M.C., D.Sc. (V.-Pres., 1946; Council, 1944–6), *Commonwealth Institute of Entomology*, 41, *Queen's Gate, London, S.W.7.*
1912 ‡ Hallett, H. M., *Forest Edge, Lea Bailey, Ross-on-Wye, Hereford.*
1934 ‡ Hamilton, A. G., B.Sc., B.Agr., Ph.D., D.I.C. (Council, 1947–), *Biological Dept., St. Thomas's Hospital Medical School, London*, S.E. 1.
1915 ‡ Hamm, Albert Harry, M.A., A.L.S., 22, *Southfield-road, Oxford.*
1928 ‡ Hammond, C. O., 34, *Passmore Gardens, New Southgate, London*, N. 11.
1945 ‡ Hammond, H. E., 16, *Elton-grove, Birmingham*, 27.
1944 ‡ Hancock, J. W., *Sunninglye Farm, Pembury, Kent.*
1946 ‡ Handfield-Jones, R. M., M.C., M.S., F.R.C.S., 149, *Harley-street, London*, W. 1.
1929 ‡ Hanson, H. S., M.Sc., *Forest Research Station, Alice Holt Lodge, Farnham, Surrey.*
1944 ‡ Hards, C. H., 40, *Riverdale-road, Plumstead, London*, S.E. 18.
1930–36, 1942 Hardwicke, S. M. B., *Friarmayne, near Dorchester, Dorset.*
1933 ‡ Hardy, Dr. J. E., *Asiatic Petroleum Co., Ltd., Technical Products Dept., St. Helen's-court, Great St. Helen's*, E.C. 3.
1903 ‡ Hare, E. J., *Harrow Place, Pinden, Dartford, Kent.*
1920 ‡ Hargreaves, E., *Briercliff, George-lane, Read, near Burnley, Lancs.*
1920 Hargreaves, H., 11, *Malbrook-road, London*, S.W. 15.
1926 Harmsworth, Sir H. A. B., 3, *Grand Mansions, Hove, Sussex.*
1946 ‡ Harper, Commander G. W., R.N., *Bramblewood, Bushby-avenue, Rustington, Sussex.*
1946 ‡ Harper, R. T., 168, *Salmon-street, Kingsbury, London*, N.W. 9.

1946 Harris, J. R., 3, *Connaught-place, Clonskeagh, Dublin.*

1928 Harris, W. V., M.Sc., Entomologist, *Agricultural Research Station, P.O. Box* 265, *Kampala, Uganda.*

1946 Harrison, G. S., F.R.G.S., *New House, High Harrogate College*, 98, *Franklin-road, Harrogate.*

1942 ‡ Harrison, J. L., B.Sc., *Institute for Medical Research, Kuala Lumpur, Malaya.*

1910 ‡ Harwood, Philip, *Ardinsh, Kincraig, Inverness-shire.*

1927 ‡ Hawkins, C. N. (Council, 1938–40), 23, *Wilton-crescent, Wimbledon, London*, S.W. 19.

1913†‡Hawkshaw, Oliver, *Chisenbury Priory, Marlborough, Wilts.*

1946 Hawley, Lt.-Col. W. G. B., D.S.O.,

1944 ‡ Hayhurst, H., *Fouray, Parkfield-road, Didsbury, Manchester*, 20.

1921 ‡ Hayward, Capt. K. J., F.R.G.S., F.Z.S., *Instituto Miguel Lillo, Calle Miguel Lillo*, 205, *Tucuman, Argentine.*

1945 ‡ Heath, J., 61, *Mowbray-road, Cambridge.*

1929–33, 1944 ‡ Hebbert, Major G. K. P., *c/o Messrs. Grindlay & Co., Bombay, India.*

1945 Hebden, A., 5, *Manston-terrace, Crossgates, Leeds.*

1943 ‡ Hedgcock, S. W., 3, *Purley-rise, Purley, Surrey.*

1910 ‡ Hedges, Alfred V., *Ballavale, Santon, Isle of Man.*

1919 ‡ Hemming, Francis, C.M.G., C.B.E. (V.-Pres., 1939, 1944, 1945; Treasurer, 1929–38; Council, 1928, 1939, 1944–6); *Wyndcliff Cottage*, 28, *Park Village East, Regent's Park, London*, N.W. 1.

1943 Henson, Dr. H., 39, *Jackson-avenue, Roundhay, Leeds*, 8.

1903 Herrod-Hempsall, W., *Hame*, 18, *Delcroft Way, Harpenden, Herts.*

1929 ‡ Heslop, Ian R. P., M.A., *c/o Griffiths McAlister*, 10, *Warwick-street*, W. 1.

1948 Heslop Harrison, G., B.Sc., Ph.D., F.R.S.E., *Dept. of Agricultural Zoology, King's College, Newcastle-on-Tyne.*

1925 Hesse, Dr. A. J., *South African Museum, Cape Town, S. Africa.*

1913 Hewitt, John, B.A., Director, *Albany Museum, Grahamstown, S. Africa.*

1941 ‡ Hewlett, Paul S., 90, *Kendal Drive, Slough, Bucks.*

1946 Hewson, Frank, 23, *Thornhill-drive, Gaisby-lane, Shipley, Yorks.*

1939 ‡ Hick, P., F.Z.S., *Athol House, Fulford-road, Scarborough, Yorks.*

1941 ‡ Hickin, N. E., Ph.D., *Plummers, Bletchingley, nr. Redhill, Surrey.*

1947 Hickman, Prof. V. V., *Royal Society of Tasmania, Tasmanian Museum, Hobart, Tasmania.*

1922 ‡ Higgins, L. G., M.A., F.R.C.S. (Council, 1936–8), *Linkwood, Woking, Surrey.*

1943 Hill, A. R., B.Sc., 58, *Abbotsford-street, Dundee, Scotland.*

1948 ‡ Hillaby, J. D., F.Z.S., 1, *Tanza-road, Hampstead, London*, N.W. 3.

1930 ‡ Hincks, W. D., M.P.S., *Whitefield Bank*, 19, *Whitefield, Heaton Norris, Stockport, Cheshire.*

1936 ‡ Hindle, Prof. E., F.R.S., *Scientific Director, The Zoological Society of London, Regent's Park, London*, N.W. 8.

1934 Hingorani, R. U., M.B., B.S., L.M., 117a, *Harley-street, London*, W. 1.

1924 ‡ Hingston, Major R. W. G., M.C. (Council, 1931–3), *Horsehead, Passage West, County Cork, Ireland.*

1934 ‡ Hinton, H. E., B.Sc., Ph.D. (Council, 1944–6), *British Museum* (*Natural History*), *S. Kensington, London*, S.W. 7.

1946 Hlisnikowski, J., *Praha IV, Na Valech* 34, *Czechoslovakia.*

1947 Hobart, J., *Dept. of Agricultural Zoology, University College of North Wales, Deiniol-road, Bangor.*

1929 ‡ Hobby, B. M., M.A., D.Phil. (V.-Pres., 1948; Council, 1937–9, 1948–), 7, *Thorncliffe-road, Oxford.*

1944 ‡ Hocken, Miss Marion G., *Meadow Way House and Studio, Porthmeor, St. Ives, Cornwall.*

1943 Hocken, Melville, M.B., B.Sc., 8, *Tremena-road, St. Austell, Cornwall.*

1935 ‡ Hodgkin, E. P., 6, *Prince's-street, S. Cottesloe, W. Australia.*

1946 Hoffmeyer, Dr. Skat, 36, *Fredensgade, Aarhus, Denmark.*

1937 ‡ Holborn, J. M., 5, *Bewlys-road, London,* S.E. 27.

1948 Holloway, P. H., *Warwick House, Fairoak, Eastleigh, Hants.*

1947 ‡ Honeybourne, T. J., 97, *Birchwood-road, Wilmington, Dartford, Kent.*

1922 ‡ Hopkins, G. H. E., O.B.E., M.A., *Greenmead,* 77*a*, *Weston-road, Aston Clinton, Bucks.*

1919 de Horrack-Fournier, Mme., 90, *Boulevard Malesherbes, Paris,* and *Château de Voisins, Louveciennes, Seine-et-Oise, France.*

1943 ‡ Howarth, Mrs. E. W., 2, *Abney-road, Heaton Chapel, Stockport, Cheshire.*

1939 Howarth, T. G., B.E.M., 66, *St. John's-road, Sevenoaks, Kent.*

1946 Howe, F. J., *Pathological Department, Hospital of St. Cross, Rugby, Warwickshire.*

1940 ‡ Howe, R. W., B.Sc., A.R.C.S., *Pest Infestation Laboratory, London-road, Slough, Bucks.*

1947 Hrbáček, Jaroslav, Jnr., *Praha XI, čp.* 1839, *U. Rajské-zahrady* 1a, *Czechoslovakia.*

1946 Hudson, E. J., 129, *City-road, Birmingham* 16.

1946 Hudson, Mrs. G. B., *c/o National Bureau for Personnel Research, Council for Scientific and Industrial Research, Private Bag* 189, *Pretoria, S. Africa.*

1936 Huggins, H. C., 875, *London-road, Westcliff-on-Sea, Essex.*

1907 Hughes, C. N., 101, *Carrington House, Hertford-street, London,* W. 1.

1947 Hughes, J. W., B.Sc., *Redmays, Woodlands-road, Shotley Bridge, Co. Durham.*

1934 ‡ Hulls, L. G., *Chemistry Branch, Military College of Science, Shrivenham, nr. Swindon, Wilts.*

1921 Hunt, The Rev. J. Wesley, *Indaleni High School, Indaleni, via Richmond, Natal, S. Africa.*

1948 ‡ Hurst, H., B.Sc., Ph.D., *Dept. of Colloid Science, The University, Cambridge.*

1944 Hussey, N. W., *Penwarne, Stonewall Park-road, Langton, Tunbridge Wells, Kent.*

1922 ‡ Hutchinson, G. E., M.A., F.L.S., *Osborn Zoological Laboratory, Yale University, New Haven, Conn., U.S.A.*

1935 Hyde, G. E., 20, *Woodhouse-road, Doncaster.*

1939 ‡ Hynes, H. B. Noel, Ph.D., A.R.C.S., *Dept. of Zoology, The University, Liverpool.*

1947 ‡ Ibbotson, A., 25, *Brockenhurst-road, Radford, Coventry.*

1927 ‡ Jackson, C. H. N., D.Sc., Ph.D., *East African Tsetse Research Organization, Shinyanga, Tanganyika Territory.*

1917 ‡ Jackson, Miss Dorothy J., *North Cliff, St. Andrews, Fife.*

1941 ‡ Jackson, Capt. R. A., C.B.E., R.N. (Council, 1946–8), *Middle Farm House, Codford St. Mary, nr. Warminster, Wilts.*

1932 ‡ Jackson, T. H. E., *Kapretwa, Kitale, Kenya Colony.*

1938 Jacot-Guillarmod, C. F., M.Sc., *Mamathes, via Teyateyaneng, Basutoland, S. Africa.*

1938 Jaczewski, Dr. T. A. F., *Dept. of Systematic Zoology, Krak-Przedm.* 26/28, *Warsaw University, Warsaw, Poland.*

1947 Janjua, N. A., M.Sc., *Fruit Experiment Station, Dept. of Agriculture, Quetta, Baluchistan, India.*
1914 ‡ Janse, Prof. A. J. T., D.Sc., 541, *Adcock-street, Gezina, Pretoria, S. Africa.*
1940 Janson, H. W., *The Homestead, Shakespeare-road, Mill Hill,* N.W. 7.
1898 Janson, Oliver J., 46, *Beresford-road, Hornsey, London,* N. 8.
1933 Janson, R. B., 44, *Great Russell-street,* W.C. 1.
1937 Jayewickreme, S. H., Ph.D., D.I.C., *Division of Medical Entomology, Baseline-road, Colombo* 10, *Ceylon.*
1932 Jeannel, Dr. R., *Muséum national d'Histoire naturelle, Rue de Buffon, Paris, Ve, France.*
1943 Jefferey, Mrs. Violet G., F.R.H.S., *Rozel, Bilton Hill, Rugby.*
1933 ‡ Jobling, B., *Wellcome Laboratory of Tropical Medicine,* 183–193, *Euston-road, London,* N.W. 1.
1937 Johnpulle, A. L., *Divisional Agricultural Office, S.C.D., Bandarawela, Ceylon.*
1948 Johnson, Major F. L., M.B.E., *United Africa Co., Ltd., Akuse, Gold Coast.*
1924 ‡ Johnston, H. B., M.A., 5, *Scroope-terrace, Cambridge.*
1933 Johnstone, Brigadier R. F., *c/o Lloyds Bank Ltd., Cox's & King's Branch,* 6, *Pall Mall,* S.W. 1.
1948 ‡ Jones, Arthur, 17, *Sea View-road, Gillingham, Kent.*
1946 ‡ Jones, Lieut. B. M., R.N.V.R., *Dept. Zoology, University of Edinburgh, West Mains-road, Edinburgh,* 9.
1948 Jones, C. M., 25, *Shaw-street, Hoylake, Cheshire.*
1930 ‡ Jones, E. Parry, B.Sc., Ph.D., *c/o Pest Control (Central Africa), Ltd., P.O. Avondale, Salisbury, S. Rhodesia.*
1948 Jones, F. G. W., M.A., *Crossways,* 40, *Tunwell's-lane, Shelford, Cambridge.*
1924 ‡ Jones, F. Morton, D.Sc., 2000, *Riverview-avenue, Wilmington, Delaware, U.S.A.*
1948 Jones, F. R., 44, *Rosebery-avenue, Sidcup, Kent.*
1938 Jones, H. E. W., *Lyndhurst, Hoole-road, Chester.*
1925 ‡ Jones, J. R. J. Ll., M.A., *Arranmore, Mill Bay, Cobble Hill, British Columbia.*
1948 ‡ Jones, P. Hunter, *Anti-Locust Research Centre, British Museum (Natural History), Cromwell-road, London,* S.W. 7.
1910 ‡ Joseph, E. G., M.C., M.A., B.Sc., *Redcot, Swanley, Kent.*

1945 ‡ Kapur, A. P., M.Sc., Ph.D., D.I.C., *c/o Zoological Survey of India, Indian Museum, Calcutta, India.*
1947 Kaufmann, R. R. U., *Shingler's Cottage, Jodrell, Holmes Chapel, Cheshire.*
1947 Kay, R. G. Webster, *Libertad* 2488, *Montevideo, Uruguay, S. America.*
1896†‡Kaye, W. J. (Council, 1906–8), *Chantry Lodge, Longdown, Guildford, Surrey.*
1925 Kearns, H. G. H., B.Sc., Ph.D., *The Research Station, Long Ashton, near Bristol.*
1940 Kemner, Dr., N., *K. Universitets-Biblioteket, Lund, Sweden.*
1938 Kendall, Mrs. M. W., 86, *Overstrand Mansions, London, S.W.* 11.
1926 Kennedy, Prof. C. H., *Ohio State University, Columbus, Ohio, U.S.A.*
1945 ‡ Kennedy, John S., Ph.D., *Agricultural Research Council, Unit of Insect Physiology, Dept. Zoology, Downing-street, Cambridge.*
1929 Kenway, H. C., 179, *Brook-street, Brooklyn, Pretoria, S. Africa.*
1934 ‡ Kerrich, G. J., M.A., *Heath Crest, Westcott, Dorking, Surrey.*
1936 Kersey, R. H., *Mandelieu, Cooden, Bexhill-on-Sea, Sussex.*
1946 ‡ Kettle, D. S., 43, *Woodberry Down, London,* N. 4.
1942 ‡ Kettlewell, H. B. D., M.A., M.B., B.Chir., M.R.C.S., L.R.C.P. (Council, 1948–), *c/o Standard Bank of S. Africa, Ltd., Cape Town, Union of South Africa.*

1942 Kevan, D. K. McE., B.Sc., *School of Agriculture, Sutton Bonington, Loughborough, Notts.*
1946 ‡ Khalsa, H. G., M.Sc., 69, *Khurbura Mahalla, Dehra Dun (U.P.), India.*
1925 Killington, F. J., D.Sc., A.L.S., *Durlston, Kimberley-road, Parkstone, Dorset.*
1917 ‡ Kirkpatrick, T. W., *Imperial College of Tropical Agriculture, St. Augustine, Trinidad, B.W.I.*
1938 ‡ Kloet, G. S., *Vanessa, Knutsford-road, Wilmslow, Cheshire.*
1948 Koch, Carlos, *c/o Prof. Raymond Dart, Section of Anatomy, Witwatersrand University, Johannesburg, S. Africa.*
1940 Krishnamurti, B., *Entomological Section, Dept. Agriculture in Mysore, Bangalore, India.*

1927 ‡ Labouchere, Col. F. A. (Council, 1939–41), 15, *Draycott-avenue, Sloane Square, London*, S.W. 3.
1922 ‡ Lacey, Lionel, 485, *Pelham-road, New Rochelle, N.Y., U.S.A.*
1925 Laidlaw, F. F., M.R.C.S., L.R.C.P., *Moniaive, St. Lawrence, Ventnor, Isle of Wight.*
1910 ‡ Lakin, C. Ernest, M.D., F.R.C.S., 58, *Portland-place, London*, W. 1.
1911†‡Lamborn, W. A., O.B.E., M.R.C.S., L.R.C.P., *Fort Johnston, Nyasaland.*
1947 ‡ Lanktree, P. A. D., 3, *Sidney-place, London*, S.W. 7.
1948 Last, H. R., 12, *Winckworth-road, Banstead, Surrey.*
1946 ‡ Latham, F. H., 26, *Hollie Lucas-road, King's Heath, Birmingham*, 14.
*1930 Lawson, J. A.
1946 Lawson, J. W. H., *Zoology Dept., The University, Glasgow*, W. 2.
1939 Lea, H. A. F., *Chief Locust Officer*, 25, *Albert-road, Pretoria, S. Africa.*
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1945 ‡ Leclercq, J., *Institut Léon Frédéricq*, 17, *Place Delcour, Liège, Belgium.*
1948 Lee, Major O. Martin, *College of Agriculture, Serdang, Selangor, Malaya.*
1948 Lees, A. D., Ph.D., *Dept. of Zoology, Downing-street, Cambridge.*
1930 ‡ Leeson, H. S., 39, *Dawlish-drive, Pinner, Middx.*
1934 Legge, Miss C. M., M.A., A.R.C.A., *Portico Library*, 57, *Mosley-street, Manchester*, 2.
1927 Leivers, A. R., 44, *Richmond-drive, Mapperley Park, Nottingham.*
1924 ‡ Le Pelley, R. H., Ph.D., *Department of Agriculture, Box* 338, *Nairobi, Kenya.*
1948 Lepesme, Dr. P., 6, *rue de Castiglione, Paris* 1e, *France.*
1938 ‡ Letts, A. W., 44, *Overton-road, Sutton, Surrey.*
1930 ‡ Lever, R. J. A. W., B.Sc., D.I.C., A.I.C.T.A., F.L.S., *Dept. Agriculture, Kuala Lumpur, Malaya.*
1931 ‡ Lewis, D. J., *Section of Medical Entomology, Gezira Research Farm, Wad Medani, A.E. Sudan.*
1938 Lewis, E. A., *c/o Veterinary Research Laboratory, Kabete, Kenya Colony.*
1908 † Lewis, John Spedan, F.Z.S., 35, *Cavendish-square, London*, W. 1.
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1946 ‡ Lloyd, Major C. T., D.Sc., Ph.D., 25, *Belmont-avenue, New Malden, Surrey.*

1934 ‡ Lloyd, H. M., *Tsetse Survey and Reclamation Dept., Shinyanga, Tanganyika Territory.*
1919 ‡ Lloyd, Llewellyn, D.Sc., *Zoological Dept., The University, Leeds.*
1933 ‡ Lloyd, O. C., M.A., M.B., B.Chir., M.R.C.S., L.R.C.P., *Dept. of Pathology, Canynge Hall, Whatley-road, Bristol* 8.
1946 ‡ Lloyd, T. A., *The Red House, Westwood-road, Ryde, Isle of Wight.*
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1920 ‡ Lodge, George, *Hawkhouse, Upper Park-road, Camberley.*
1946 ‡ Lovell, R., 27, *Athenaeum-road, Whetstone, London,* N. 20.
1925 ‡ Longfield, Miss C. (V.-Pres., 1947–8 ; Council, 1932–4, 1946–8), 11, *Iverna-gardens,* W. 8.
1948 Lowe, G. H., M.B., Ch.B., D.P.H., *c/o The Director of Medical Services, Kuala Lumpur, Malaya.*
1923 Lowther, R. C., M.B., Ch.B., *Fernleigh, Grange-over-Sands, Lancs.*
1936‡ Loynes, N., *Wichenford, Worcester.*
1946 ‡ Lumsden, W. H. R., B.Sc., Ch.B., *c/o* 64, *Grange-road, Darlington, Co. Durham.*

1937 ‡ Macan, Major T. T., M.A., Ph.D., R.A.M.C., *Stevney, Outgate, Ambleside, Westmorland.*
1947 McCartney, G., *Beechgrove, Kirkpatrick-Durham, by Castle Douglas, Scotland.*
1944 McCluggage, E. R. B., *Flowerfield, Lisburn, Co. Antrim.*
*1936‡ Macfie, J. W. S., M.A., D.Sc., M.B., Ch.B.
1944 ‡ McGarvey, John, M.B., B.Ch., *Westfield, Wells, Somerset.*
1930 McHardy, J. W., B.Sc., 53, *Liberton-drive, Edinburgh.*
1928 ‡ McKenny-Hughes, Major A. W., R.A.M.C., D.I.C. (V.-Pres., 1937 : Secretary, 1934–6 ; Council, 1937), *British Museum (Natural History), Cromwell-road, London,* S.W. 7.
1919 ‡ Mackworth-Praed, C. W., *Castletop, Burley, Ringwood, Hants.*
1938 Mackworth-Praed, H. W., 16b, *Elvaston-place, S. Kensington, London,* S.W. 7.
1929 ‡ MacLagan, D. Stewart, Ph.D., D.Sc., F.R.S.E., *The Zoological Dept., West of Scotland Agricultural College, Blythswood-square, Glasgow,* C. 2.
1936 ‡ MacLeod, J., D.Sc., Ph.D., *Crosby Laboratory, Irthington, Carlisle.*
1919 McLeod, Sir Murdoch, Bt., *Culverlea House, Pennington, Lymington, Hants.*
1940 Macpherson, J. G., *Fairstead, Gt. Warley, Brentwood, Essex.*
1946 Maina, Capt. Barth A., 10623, *Church-street, Chicago* 43, *Illinois, U.S.A.*
1947 ‡ Manley, Lt.Col. W. B., *The Guards' Club, Charles-street, London,* W. 1.
1942 Marsden-Jones, Eric M., F.L.S., *Close Cottage, Littleton Panell, Devizes, Wilts.*
1947 Marsh, Capt. J. C. S., R.A., *c/o Lloyds Bank, Ltd., Cox's and King's Branch,* 6, *Pall Mall, London,* S.W. 1.
1895 ‡ Marshall, Sir Guy A. K., K.C.M.G., D.Sc., F.R.S., F.Z.S. (V.-Pres., 1919, 1924, 1932 ; Council, 1907–8, 1919–21, 1924–6, 1928–30, 1932–4, 1938–40, 1945–7), 31, *Melton Court, Onslow Crescent, London,* S.W. 7.
1935 Marshall, J., *Blackwood, Tweedie, Natal, S. Africa.*
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1945 Marson, J. E., 35, *High Park-drive, Heaton, Bradford, Yorks.*
1922 ‡ Massee, A. M., D.Sc. (V.-Pres., 1949 ; Council, 1939–41, 1947–), *East Malling Research Station, East Malling, Kent.*
1937 Massy, Miss N. C., *c/o Educational Museum, Haslemere, Surrey.*

1938 Matheson, C., M.A., B.Sc., *National Museum of Wales, Cardiff.*
1948 ‡ Matthews, G. A., 35, *Eastleigh-road, Barnehurst, Kent.*
1942 ‡ Mattingly, Major P. F., R.A.M.C., *Fourwinds, Slines Oak-road, Woldingham, Surrey.*
1912 Maulik, Prof. S., M.A., D.Sc., D.I.C., *c/o R. Maulik, Clock Tower, Hogg Market, Calcutta, India.*
1948 Maycock, A. G., *P.O. Box* 1744, *Bulawayo, S. Rhodesia.*
1946 ‡ Meikle, Miss Agnes A., B.Sc., *c/o* 184, *Nithsdale-road, Glasgow,* S. 1.
1929 ‡ de Meillon, Botha, *South African Institute for Medical Research, Box* 1038, *Johannesburg, S. Africa.*
1933 ‡ Mellanby, K., O.B.E., M.A., Sc.D., Ph.D., *Principal, University College, Ibadan, Nigeria.*
1946 Mellers, W., *School House, Bodenham, Hereford.*
1948 ‡ Menon, Dr. M. G. Ramdas, *c/o Dept. of Entomology, U.S. National Museum, Washington, D.C., U.S.A.*
1947 ‡ Mere, R. M., *Green Ridges, Churt-road, Hindhead, Surrey.*
1912 ‡ Metcalfe, Rev. J. W., *Holmbank, Westcott, Surrey.*
1926 ‡ Michelmore, A. P. G., *Saffron Close, Chudleigh, S. Devon.*
1935 Mickel, Prof. C. E., Ph.D., *Division of Entomology, Dept. of Agriculture, University of Minnesota, St. Paul, Minn., U.S.A.*
1945 Miles, P. M., 107, *Victoria-road, Summerton, Oxford.*
1920 ‡ Miller, D., Ph.D., Chief of Dept. of Entomology, *The Cawthron Institute, Nelson, New Zealand.*
1946 Miller, L. W., M.Agr.Sci., *Dept. Agriculture, Hobart, Tasmania.*
1921 Miller, N. C. E., *High Trees, P.O. Odzi, S. Rhodesia.*
1930 Misra, Dr. A. B., *Hindu University, Benares, India.*
1934 Mitchell, B. L., *Veterinary Department, Blantyre, Nyasaland.*
1944 Mollison, P. W., *Pest Control Ltd., Kelvedon, Colchester, Essex.*
1946 ‡ Moore, B. P., B.Sc., Ph.D., 81, *Burnham-way, West Ealing, London,* W. 13.
1937 Moore, George A., *Lyman Entomological Room, Redpath Museum, McGill University, Montreal, Canada.*
1899 ‡ Moore, Harry, 9, *Hoopwick-street, Deptford,* S.E. 8.
1927 Moore, H. W. B., 153–15, 109*th Road, Jamaica, L.I., New York, U.S.A.*
*1922 Moore, J. W.
1947 ‡ Morcos, G., *Entomological Section, Ministry of Agriculture, Cairo, Egypt.*
1946 ‡ Morgan, Mrs. M. J., B.Sc., 1, *Whitegate-drive, Siddall, Halifax, Yorks.*
1923 ‡ Morison, G. D., B.Sc., Ph.D., *Entomological Dept., Marischal College, Aberdeen.*
1948 Morrison-Godfrey, Lt.-Col. P. W., 18, *Queen's-road, Bury St. Edmunds, Suffolk.*
1945 ‡ Morley, A. M., O.B.E., M.A., 9, *Radnor Park West, Folkestone, Kent.*
1938 ‡ Morley, B. D. Wragge, F.Z.S., F.L.S., *Sundial House, Holly Hill, Hampstead, London,* N.W. 3.
1895†‡Morley, Claude, F.G.S., F.Z.S., *Monks Soham House, near Framlingham, Suffolk.*
1920 ‡ Morris, H. M., M.Sc., *Agricultural Dept., Nicosia, Cyprus.*
*1911‡Moss, The Rev. A. Miles.
1911 Mounsey, J. Jackson, *La Moye Golf Hotel, Jersey, Channel Islands.*
1931 Moutia, L. A., *Dept. of Agriculture, Reduit, Mauritius.*
1912 † Mullan, Jal P., M.A., F.L.S., F.Z.S., Professor of Biology, *St. Xavier's College, Lamington-road, Grant-road Post, Bombay, India.*
1925 Mumford, E. P., M.A., M.Sc., *Box* 802, *Stanford University, California, U.S.A.*
1920 Munro, H. K., D.Sc., *P.O. Box* 513, *Pretoria, South Africa.*

1918 Munro, Prof. J. W., D.Sc., (Council, 1927–9), *Imperial College of Science, S. Kensington*, S.W. 7.
1948 ‡ Murray, Rev. D. P., *The Priory, Wellington-street, Leicester.*
1922 ‡ Musgrave, A., *Australian Museum, Sydney, N.S.W., Australia.*
1943 Musgrave, A. J., M.Sc., *Entomology Department, Ontario Agricultural College, Guelph, Ontario, Canada.*
1945 Muspratt, Mrs. V. M., *Aicé Choko, St. Jean-de-Luz, Basses Pyrénées, France.*

1938 Narayanan Ayyar, E. S., M.A., *Dept. Entomology, Imperial Agricultural Research Institute, New Delhi, India.*
1926 ‡ Nash, T. A. M., O.B.E., D.Sc., Ph.D., A.R.C.S., *West African Institute for Trypanosomiasis Research, Kaduna, Nigeria.*
1939 Nathan, Leonard, 19, *Monton-street, Moss Side, Manchester*, 14.
1947 Natvig, L. R., *University Zoological Museum, Trondheimsvn*, 23, *Oslo* 45, *Norway.*
1938 Naudé, Dr. T. J., *P.O. Box* 513, *Pretoria, South Africa.*
1919 ‡ Nell, Louis, 122, *Palewell Park, East Sheen, London*, S.W. 14.
1919 Nelson, W. G. F. (Council, 1922–4), 64, *Lincoln's Inn Fields, London*, W.C. 2.
1947 Nesbitt, H. H. J., *Division of Entomology, Dept. of Agriculture, Ottawa, Ontario, Canada.*
1923 ‡ Newland, Gordon, 166, *Piccadilly, London*, W. 1.
1943 ‡ Newman, L. Hugh, 41–2, *Salisbury-road, Bexley, Kent.*
1945 ‡ Newson, A. J., 41, *Avondale-road, Luton, Beds.*
1941 Newton, A. H., M.B., Ch.B., *Charles Johnson Memorial Hospital, Nqutu, Zululand, S. Africa.*
1946 ‡ Niblett, M., 10, *Greenway, Wallington, Surrey.*
1921 ‡ Nicholson, A. J., D.Sc., *Division of Economic Entomology, C.S.I.R., Box* 109 *P.O., Canberra, A.C.T., Australia.*
1946 Nielsen, Dr. E. T., *Pilehuset, Frederiksvaerk, Denmark.*
1938 ‡ Nixon, G. E. J., B.A. (Council, 1946–8), *British Museum (Natural History), Cromwell-road, London*, S.W. 7.
1943 ‡ Noble, James B., F.R.M.S., *Philomath*, 174, *Huyton-lane, Huyton, Lancs.*
1933 ‡ Notley, F. B., Major, M.Sc., *Coffee Research and Experimental Station, Lyamungu, Moshi, Tanganyika Territory.*

1941 ‡ O'Farrell, A. F. L., *New England University College, Armidale, N.S.W., Australia.*
1937 ‡ Oldroyd, H., M.A., *British Museum (Natural History), Cromwell-road, London*, S.W. 7.
1931 Oliver, W. R. B., D.Sc., F.L.S., *Dominion Museum, Wellington, N.Z.*
1948 Oman, P. W., Ph.D., *U.S. Bureau of Entomology and Plant Quarantine, U.S. Dept. of Agriculture, Washington*, 25, *D.C., U.S.A.*
1944 O'Rourke, F. J., M.B., B.Ch., M.Sc., *Dept. of Entomology and Parasitology, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool*, 3.
1947 Owen, D. E., Ph.D., F.G.S., *City Museum, Park Row, Leeds*, 1.

1932 Pagden, H. T., M.A., *Senior Entomologist, Department of Agriculture, Kuala Lumpur, Malaya.*
1946 ‡ Pal, Rajindar, M.Sc., Ph.D., *Department of Entomology, London School of Hygiene and Tropical Medicine, Keppel-street, London*, W.C. 1.
1943 Palmer, A. E., 22, *St. Stevens-avenue, Ealing, London*, W. 13.
1916–36, 1944 Palmer, A. R., *Oving, The Avenue, Flitwick, Beds.*
1948 Palmer, Dr. C. R., 519, *London-road, Thornton Heath, Surrey.*
1945 Palmer, J. L., O.B.E., F.R.G.S., *Chetwode, Mannamead, Plymouth.*

1931 Palmer, K. L., *Meadowlea, Gobowen, Shropshire.*

1948 ‡ Pant, N. C., M.Sc., 13, *Edith-road, West Kensington, London,* W. 14.

1947 Parker, A. H., B.Sc., *Zoological Department, The University, Nottingham.*

1935 ‡ Parmenter, L., 94, *Fairlands-avenue, Thornton Heath, Surrey.*

1939 ‡ Parsons, R. E. R., *Woodlands Lodge, Woodlands Close, Ottershaw, Surrey.*

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1944 ‡ Patrick, H. H., F.R.H.S., 5, *Marner-crescent, Radford, Coventry.*

1944 ‡ Patton-Bethune, Major C. L., M.C., 33, *Collingham-road, Earl's Court, London, S.W.* 5.

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1922 ‡ Pearce, The Rev. E. J., M.A., *Priory of St. Teilo, Church-terrace, Roath, Cardiff.*

1927 ‡ Pearman, J. V., 56, *Clifton Park-road, Clifton, Bristol,* 8.

1939 ‡ Pearson, E. O., *c/o Empire Cotton Growing Corporation,* 1*a*, *Harrington-road, South Kensington, London,* S.W. 7.

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1914 ‡ Pendlebury, Major Wm. J. de Monté, M.A., *The Old House, Canonbury, Shrewsbury.*

1931 ‡ Pennington, K. M., *Michaelhouse, Balgowan, Natal, S. Africa.*

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1938 ‡ Pescott, R. T. M., M.Agric.Sc., *Director, National Museum, Russell-street, Melbourne* C. 1, *Australia.*

1947 Philipson, G. N., B.Sc., *The Hall West, Forest Hall, Newcastle-upon-Tyne.*

1948 Philpott, V. W., *Green Hill House, Weymouth.*

1947 ‡ Phipps, J., M.Sc., D.I.C., *Medical Research Laboratory, Yuheza, Tanga, Tanganyika Territory.*

1917 ‡ Pickard-Cambridge, Arthur W., M.A., D.Litt., *St. Catherine's, Marley, nr. Haslemere, Surrey.*

1945 Pickles, Walter, 2, *Cypress-villas, Wakefield-road, Gosforth, Leeds.*

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1932 Pinder, J. E., *Melissa, Belle Vue-road, Salisbury.*

1944 ‡ Pinniger, E. B., *Dalegarth,* 5, *Endlebury-road, Chingford, London,* E. 4.

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1930 ‡ Potter, C., B.Sc., Ph.D., D.Sc. (Council, 1941–3), *Rothamsted Experimental Station, Harpenden, Herts.*

1929 ‡ Potts, W. H., B.A., 99, *Ridge-road, Winchmore Hill, London,* N. 21.

1946 ‡ Pradhan, S., D.Sc., *Rothamsted Experimental Station, Harpenden, Herts.*

1948 Price, M.D., B.Sc., A.R.C.Sc., 136, *Worple-road, Wimbledon, London,* S.W. 19.

1937 Pringle, J. A., *Port Elizabeth Museum and Snake Park, P.O. Box* 914, *Port Elizabeth, S. Africa.*

1948 Pryor, M. G. M., Ph.D., 24, *Barton-road, Cambridge.*

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1939 ‡ Pugh, C. H. Wallace, *Derwent Dene, Oswestry, Salop.*

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1912 ‡ Rait-Smith, W. (Council, 1924–6; 1929–31), *Hurstleigh, Linkfield-lane, Redhill, Surrey.*
1924 ‡ Ralfs, Miss E. M., B.A., F.Z.S. (Council, 1943–5), *British Museum (Natural History), Cromwell-road, London,* S.W. 7.
1946 ‡ Ramachandra Rao, T., M.Sc., *Malaria Organisation, Bombay Province, Dharwar, India.*
1946 Ramakrishna, V., M.A., B.Sc., *Malaria Assistant, Malaria Institute of India, Malaria Control Unit, P.O. Mundaji (S.K. District), South India.*
1916 ‡ Ramchandra Rao, Rao Bahadur Y., M.A., *Deputy Director, Bureau of Plant Protection, Dept. of Agriculture, New Delhi, India.*
1946 Read, G. Dick, M.A., M.D., 25, *Harley-street, London,* W. 1.
1946 ‡ Reeve, F. C., F.Z.S., 42, *Cromwell-road, Hove, Sussex.*
1939 ‡ Reid, J. A., M.Sc., *Institute for Medical Research, Kuala Lumpur, Malaya.*
1946 ‡ Rennie, P. J., A.R.C.S., *c/o School of Forestry, The University, Oxford.*
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1910 ‡ de Rhé-philipe, G. W. V., *Quest End, Highfields, Ashtead, Surrey.*
1927 ‡ Richards, Arthur J., *Treverbyn, Thursley, Godalming, Surrey.*
1933–39, 1946 ‡ Richards, Mrs. M. J., 17, *Inglis-road, Ealing, London,* W. 5.
1924 ‡ Richards, O. W., M.A., D.Sc. (V.-Pres., 1945; Secretary, 1937–40; Council, 1931–3, 1941, 1943–5), *Imperial College of Science and Technology, Prince Consort-road,* S.W. 7.
1920 ‡ Richards, P. B., *c/o Lloyds Bank Ltd., Truro, Cornwall.*
1945 ‡ Richards, W. S., *Dept. of Zoology, University College of N. Wales, Bangor.*
1937 ‡ Richardson, A., M.A., *Beaudesert Park, Minchinhampton, Glos.*
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1930 Ries, D. T., M.S., Ph.D., *Dept. Biology, Illinois State Normal University, Normal, Illinois, U.S.A.*
1912 ‡ Riley, N. D., F.Z.S. (Secretary, 1941– ; Treasurer, 1939–40; Secretary, 1926–9; V.-Pres., 1929, 1940; Council, 1921–3, 1930, 1933–5, 1938), 7, *McKay-road, Wimbledon,* S.W. 20, and *British Museum (Natural History), S. Kensington, London,* S.W. 7.
1940 ‡ Ripper, Dr. W. E., *Buccleuch, Harston, nr. Cambridge.*
1917 ‡ Roberts, A. W. Rymer, M.A., *Applegarth, Cartmel, Grange-over-Sands, Lancs.*
1946 Roberts, Granville, *P.O. Ngong, Nairobi, Kenya.*
*1927–37, 1942 Roberts, J. E. H., O.B.E., M.B., F.R.C.S.
*1889–98, 1925‡ Robinson, A., B.A.
1948 Robinson, H. S., *Lower Farringdon, Alton, Hants.*
1942 ‡ Roche, P. J. L., M.R.C.S., L.R.C.P., *c/o D.M.S., Lagos, Nigeria.*
1947 ‡ Rockingham, Lieut. N. W., R.N., *R.A.F., Middle Wallop, near Stockbridge, Hants.*
1921 ‡ Roebuck, A., *National Agricultural Advisory Service, Shardlow Hall, Shardlow, near Derby.*

1946 ‡ Roepke, Prof. W., *Entomological Laboratory, Agricultural University, Berg 37, Wageningen, Holland.*
1922 ‡ Rosa, A. F., M.D., 4, *Bellevue-crescent, Edinburgh.*
1932 ‡ Rosevear, D. R., *Forest Headquarters, Ibadan, Nigeria.*
1930 ‡ Rothschild, The Hon. Miriam (Council, 1939–41), *Ashton Wold, Peterborough.*
1913–20, 1944 ‡ Rowden, A. O., *Rydon Crest, Countess Wear, Exeter, Devon.*
1903–10, 1939 Rowlands, O. W., *Burleigh, Colwall, Malvern, Worcs.*
1943 ‡ Rudland, W. L., 16, *Mansfield-road, Reading, Berks.*
1928 ‡ Russell, A. G. B., M.V.O., *Scar Bank House, Swanage, Dorset.*
1944 ‡ Russwurm, A. D. A., 66, *Kensington Park-road, London,* W. 11.
1948 Ruttledge, W., M.A., *Rosturk, Westport, Co. Mayo, Eire.*

1919 ‡ St. Aubyn, John G., F.R.P.S., 14, *Purley Knoll, Purley, Surrey.*
1946 Salmon, J. T., D.Sc., *Dominion Museum, Wellington,* C. 3, *New Zealand.*
1928 ‡ Salt, George, Ph.D., D.Sc., Sc.D. (Council, 1942), *The Zoological Laboratory, Cambridge.*
1926 ‡ Samman, Miss M., *The Croft, North Ferriby, E. Yorks.*
1933 ‡ Sandeman, R. G. C. C., *Dan-y-Parc, Crickhowell, Breconshire.*
1946 Sandrasagara, T. R., *Entomological Laboratory, National Museums of Ceylon, Cinnamon-gardens, Colombo* 7, *Ceylon.*
1948 Satchell, G. H., B.Sc., Ph.D., *Zoology Department, University of Otago, Dunedin, New Zealand.*
1945 Saunders, Capt. Curtis, Ph.D., *Army Area Laboratory, Brooke Army Medical Centre, Fort Sam Houston, San Antonio, Texas, U.S.A.*
1910 ‡ Saunders, H. A., *Sherwood, Cliff-avenue, Swanage, Dorset.*
1923 ‡ Saunders, Prof. L. G., M.Sc., Ph.D., *Dept. of Biology, University of Saskatchewan, Saskatoon, Canada.*
1920 Scharff, J. W., M.D., D.Ph., *Rydal Mount, Potters Bar, Middx.*
1909 ‡ Scott, Hugh, M.A., Sc.D., F.R.S., F.L.S. (V.-Pres., 1926; Council, 1925–7), *British Museum (Natural History), Cromwell-road, London,* S.W. 7.
1926 ‡ Sevastopulo, D. G., *c/o Ralli Bros., Ltd., P.O. Private Bag, Mombasa, Kenya Colony.*
1931 Seydel, Dr. C., *P.O. Box* 712, *Elizabethville, Katanga, Congo Belge.*
1946 Sharma, R. C., *c/o Mr. K. O. Sharma, Leader Buildings, Allahabad (U.P.), India.*
1925 Shaw, F., *c/o National Bank of Egypt,* 6–7, *King William-street,* E.C. 4.
1923 Sherman, J. D., Jun., 132, *Primrose-avenue, Mt. Vernon, New York, U.S.A.*
1947 Shewell, G. E., M.Sc., *Division of Entomology, Science Service, Dept. of Agriculture, Ottawa, Ontario, Canada.*
1929 ‡ Shute, P. G., M.B.E., *"Litorea," Temple-road, Epsom.*
1946 ‡ Siddorn, J. Walton, *Grange, Third-avenue, Clacton-on-Sea, Essex.*
1946 Sills, E. H., 32, *Woodside-avenue, Coventry.*
1911 ‡ Simes, J. A., O.B.E. (Council, 1935–7, 1947–), *Kingsley Cottage, Queen's-road, Loughton, Essex.*
1941 Simmonds, F. J., M.A., B.Sc., Ph.D., *Imperial Bureau of Biological Control,* 228, *Dundas-street, Belleville, Ontario, Canada.*
1904 ‡ Simmonds, H. W., O.B.E., *c/o Bank of Adelaide, Adelaide, South Australia.*
1921 ‡ Simms, H. M., B.Sc., *Wellholme, Westminster-avenue, Chester.*
1938 Skellam, J. G., 585, *London-road, Oakhill, Stoke-on-Trent.*
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1948 Smith, Kenneth G. V., *Antiopa*, 38, *Barrow-street, Much Wenlock, Shropshire.*
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1948 Stephenson, P. R., *Agricultural Department, P.O. Box* 338, *Nairobi, Kenya.*
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1945 ‡ Stoughton-Harris, G., M.A., F.C.A., *Rosegarth, Waldens-road, Horsell, Woking, Surrey.*
1945 Strickland, A. H., B.A., *Guestling House, Guestling, Sussex,* and *W. African Cacao Research Inst., Tafo, Gold Coast, British West Africa.*
1947 ‡ Stroyan, H. L. G., M.A., *Dept. of Zoology, The University, Cambridge.*
1938 Sweetman, Dr. Harvey L., *Massachusetts State College, Amherst, Mass., U.S.A.*
1918 Symmons, Miss Saida, B.Sc., *Natural History Department, Marischal College, Aberdeen, Scotland.*
1920 ‡ Syms, Edgar E., 22, *Woodlands-avenue, Wanstead,* E. 11.

1941 ‡ Talhouk, Abdul Mon'im S., *Aley, Lebanon, Syria.*
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1947 Taylor, G. C., M.Sc., B.Agric., *c/o Dept. of Agriculture, Njala via Mano, Sierra Leone, British West Africa.*
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1948 ‡ Taylor, P. G., 51, *Woodland-drive, Watford, Herts.*

1945 ‡ Taylor, T. H. C., D.Sc., *Commonwealth Institute of Entomology, British Museum* (*Natural History*), *London*, S.W. 7.

1946 ‡ Temple, Miss Vere, *King's Chase, Tollard Royal, Salisbury, Wilts.*

1944 Thompson, G. H., *St. Edmund Hall, Oxford*, and 66, *Clifton-road, Rugby.*

1925 Thompson, H. W., M.Sc., *Ministry of Agriculture and Fisheries, Quarry Dene, Weetwood-lane, Leeds*, 6.

1936 Thompson, J. A., M.A., *Sulby Hall, Welford, near Rugby, Staffs.*

1928 ‡ Thompson, W. R., Ph.D., D.Sc.,. F.R.S. (Council, 1938–40), *Parasite Laboratory, Bellvue, Ontario, Canada.*

1938 Thomson, Dr. R. C. Muirhead, *London School of Hygiene and Tropical Medicine, Keppel-street* (*Gower-street*), *London*, W.C.1.

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1946 Thornton, J. N., 123, *Otley Old-road, Leeds*, 6.

1948 Thorpe, John, 11, *Egghill-lane, Northfield, Birmingham*, 31.

1926 ‡ Thorpe, W. H., M.A., Sc.D. (V.-Pres., 1944, 1949; Council, 1934–6, 1942–4, 1948–), *Zoological Laboratory, The Museums, Cambridge.*

1945 ‡ Thorsteinson, Lt. A. J., *Dept. of Entomology, University of Manitoba, Winnipeg, Canada.*

1948 Tidman, D. A., F.R.S. Trop. Med. and H., 4, *The Square, Kingsley Green, near Haslemere, Surrey.*

1941 Timms, Cartwright, 524*a*, *Moseley-road, Birmingham* 12.

1920 ‡ Tinsley, Joseph, *Rose Dene, Oakfields-road, Knebworth, Herts.*

1948 Tinsley, T. W., 5, *Cowper-road, Harpenden, Herts.*

1897 ‡ Tomlin, J. R. le B., M.A. (Council, 1911–13), 23, *Boscobel-road, St. Leonards-on-Sea.*

1934 Tongyai, M. R. Chakratong, *Section of Entomology, Dept. of Agriculture, Bangkok, Siam.*

1928 ‡ Tottenham, Rev. C. E., M.A. (Council, 1943–5), 39, *Eltisley-avenue, Cambridge.*

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*1898‡Turner, A. J., M.D.

1947 Urton, W., A.R.P.S., 706, *Chatsworth-road, Chesterfield.*

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1945 Valletta, Anthony, 214, *Msida-street, B'Kara, Malta.*

1948 ‡ Vallins, F. T., 4, *Tattenham-grove, Tattenham Corner, Epsom, Surrey.*

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1939 ‡ Van Emden, Dr. F., 20, *Wilton-grove, Wimbledon*, S.W. 19.

1948 van Konynenburg, Miss Joyce, *Hawthorn House, Spalding, Lincs.*

1948 van Hille, J. C., Ph.D., *Dept. of Zoology, Rhodes University College, Grahamstown, S. Africa.*

1944 Van Someren, G. R. Cunningham, *Public Health Dept., Municipal Council of Nairobi, P.O., Box* 651, *Nairobi, Kenya Colony.*

1922 ‡ Van Someren, V. G. L., C.M.Z.S., *Box* 1682, *Nairobi, Kenya Colony.*

1933 Van Son, G., M.Sc., *P.O. Box* 413, *Transvaal Museum, Pretoria, South Africa.*

1948 Vargas, Luis, M.D., M.P.H., M.Sc., *C. Escuela Médico-Militar* 20, *Mexico, D.F., Mexico.*
1934 ‡ Varley, G. C., M.A., Ph.D., Hope Professor of Zoology (Entomology) in the University of Oxford, *Hope Department, University Museum, Oxford.*
1904†‡Vaughan, Capt. W., *Albion Press*, 50½, *Princess-street, Winnipeg, Manitoba, Canada.*
1947 Vayssiere, P., *Muséum national d'Histoire naturelle*, 57, *Rue Cuvier, Paris Ve, France.*
1914 ‡ Veitch. Robert, B.Sc., *Dept. of Agriculture and Stock, Brisbane, Australia.*
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1946 ‡ Wafa, A. K., *Faculty of Agriculture, Giza, Egypt.*
*1897‡Wainwright, C. J., F.Z.S. (Council, 1901, 1912–14).
1935 Walker, Dr. E. M., Professor of Invertebrate Zoology, *Dept. of Biology, University of Toronto, Toronto, Canada.*
1948 ‡ Waloff, Miss N., Ph.D., *Dept. of Zoology and Applied Entomology, Imperial College of Science, South Kensington, London,* S.W. 7.
1944 Walton, A. M., 275, *Croxted-road, West Dulwich, London,* S.E. 21.
1939 ‡ Walton, G. A., M.B., Ch.B., 34, *Northumberland-avenue, Redland, Bristol* 6, and *Medical Research Laboratory, Nairobi, Kenya.*
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1938 ‡ Weatherill, L. H., *Bank of England* (*Glasgow Office*), 145, *St. Vincent-street, Glasgow.*
1945 ‡ Webb, J. E., B.Sc., Ph.D., *Zoology Department, University College, Ibadan, Nigeria.*
1948 Weightman, C., *Shilford, Stocksfield-on-Tyne, Northumberland.*
1933 ‡ Welti, A. (Treasurer, 1942– ; Council, 1939–41), *Marden*, 5, *Oakley-road, Upper Warlingham, Surrey.*
1933 ‡ Welti, Mrs. I. M. T., *Marden*, 5, *Oakley-road, Upper Warlingham, Surrey.*
1947 West, H. H., 68, *Harley House, London,* N.W. 1.
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1946 White, K. M., *Hazelhurst, Blackpool Corner, Axminster, Devon.*
1918 ‡ White, Ronald Senior, F.R.S.E., *c/o The Director of Medical Services, Port of Spain, Trinidad, British West Indies.*
1923 ‡ Whitfield, F. G. Sarel, D.I.C., F.R.M.S., *Avebury, Goring-on-Thames, Oxon.*
1948 Whitehead, G. B., *Dept. of Zoology, Rhodes University College, Grahamstown, S. Africa.*
1948 ‡ Whitehorn, K. P., 205, *Hither Green-lane, Lewisham, London, S.E.* 13.
1913†‡Whitley, P. N., *Brantwood, Halifax,* and *New College, Oxford.*
1948 Whitnall, A. B. M., M.Sc., 14, *Henry-street, Grahamstown, S. Africa.*
1944 Whitworth, J. W., F.Z.S., 334, *Leeds-road, Bradford, Yorks.*

1926 ‡ Wigglesworth, V. B., M.A., B.Ch., M.D., F.R.S., (V.-Pres., 1934, 1939; Council, 1932–4, 1938–40), *The Gables, Mount Pleasant, Cambridge.*

1923 Wightman, A. J. C., *Aurago, Pulborough, Sussex.*

1948 Wilkinson, P. R., C.I.R., *P.O. Box* 18, *Entebbe, Uganda.*

1923 Wilkinson, Harold, *Dept. of Agriculture, Nairobi, Kenya Colony.*

1948 Willemse, Dr. C. J. M., *Eygelshoven, Z.L., Holland.*

1911 ‡ Williams, C. B., M.A., D.Sc. (Pres., 1947–8; V.-Pres., 1942, 1945, 1946, 1949; Council, 1934–6, 1942, 1944–6, 1949), *Rothamsted Experimental Station, Harpenden, Herts.*

1948 ‡ Williams, D. W., M.Sc., Ph.D., *Dept. of Agriculture,* 69, *Berkley-street, Glasgow.*

1943 ‡ Williams, E. F., *Warley Lea, Brentwood, Essex.*

1915 ‡ Williams, H. B., K.C., LL.D. (V.-Pres., 1944, 1946; Council, 1944–6), *Croft Point, Bramley, Surrey*

1948 ‡ Williams, J. J., *Dept. of Entomology, Imperial College of Science and Technology, S. Kensington, London,* S.W. 7

1943 Williams, Joseph L., A.B., A.M., Ph.D., M.D., *Mercy Douglas Hospital,* 5000, *Woodland-avenue, Philadelphia, Pa., U.S.A.*

1947 ‡ Williams, J. R., *Dept. of Agriculture, Réduit, Mauritius.*

1934 Wilson, F., *c/o Division of Economic Entomology, Box* 109, *Post Office, Canberra, A.C.T., Australia.*

1937 ‡ Wiltshire, E. P., *c/o Foreign Office, Downing-street* (*For bag to Cairo*), S.W. 1.

1938 ‡ Winston, G. D., M.R.C.S., L.R.C.P., 85, *Oxford-gardens, London,* W. 10.

1928 Winter, A. E., *Langton Lodge, Scotton, Knaresboro, Yorks.*

1926 ‡ Womersley, H., 43, *Carlisle-road, Westbourne Park, Adelaide, S. Australia.*

1948 ‡ Wood-Baker, C. S., M.Sc., Ph.D., 77, *Greenway, Chislehurst, Kent.*

1905 Woodbridge, F. C., *Briar Close, Latchmore-avenue, Gerrard's Cross S.O., Bucks.*

1925 ‡ Woodcock, A. J. A., M.Sc. (Council, 1948–), *Rhianva,* 65, *Rock-avenue, Gillingham, Kent.*

1943 ‡ Woodcock, G. S., *Ivy House, Bishops Hall, Brentwood, Essex.*

1946 Woods, G. F., 25, *Gertrude-street, Nelson, Lancs.*

1944 ‡ Woodville, H. C., M.Sc., *Dept. of Entomology, National Agricultural Advisory Service, Shaplake Mount, Starcross, Exeter, Devon.*

1925 ‡ Woodward, Capt. G. C., R.N., *The Red House,* 10, *Bordyke, Tonbridge, Kent.*

1948 ‡ Woodward, T. E., *Dept. of Zoology, Auckland University College, Auckland, New Zealand.*

1921 Woollett, G. F. C., *Parklands, Merrow, Guildford, Surrey.*

1926 ‡ de Worms, The Baron, M.A., Ph.D., A.I.C., F.R.I.C., M.B.O.U. *Westcroft,* 26, *Common Close, Horsell, Woking, Surrey.*

1946 Worthington-Stuart, Brian, 51, *Albemarle-road, Beckenham, Kent.*

1927 Wright, A. E., *Brunleigh, Kent Bank-road, Grange-over-Sands.*

1947 Wynter-Blyth, M. A., M.A., *Himat Vilas Jamnagar, Kathiawar, India.*

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